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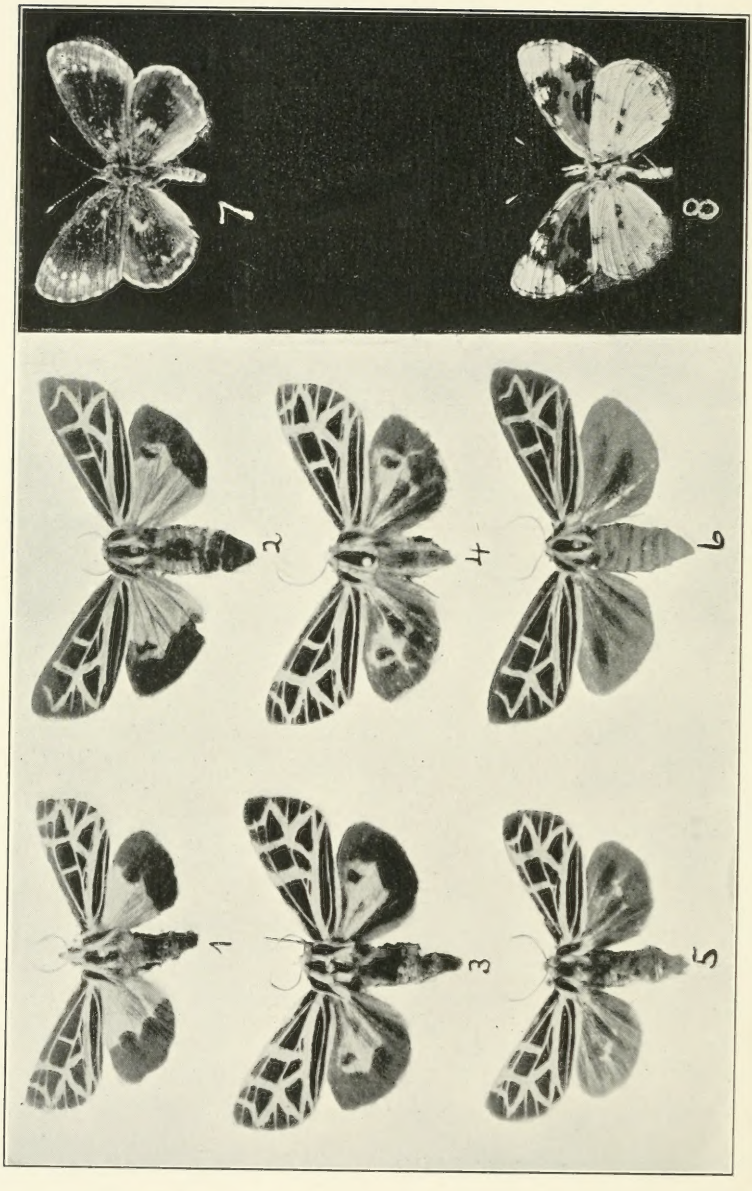

APANTESIS, 1-6, PHYCIODES, 7, 8.—BREHME.

ENTOMOLOGICAL NEWS

AND

PROCEEDINGS OF THE ENTOMOLOGICAL SECTION

ACADEMY OF NATURAL SCIENCES, PHILADELPHIA.

VOL. XXIV. MAY, 1913. NO. 5.

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A Note on Apantesis anna and persephone (Lepid.).

By HERMAN H. BREHME, Newark, N. J.

(Plate VII, figs. 1-6.)

Arctia anna and *persephone* were described by Grote from a single female and a single male respectively. It has long been known that these names apply to forms of one species. *A. anna* is the less common form with wholly black hind wings and has been said by collectors to have no male. *A. persephone* is usually represented in collections by the forms having yellow hind wings with a broad black margin and a black discal lunule joined sometimes to the marginal band. This form occurs commonly in both sexes (Plate VII, Figs. 1 and 2). But with it are usually associated males of a form having the marginal band joined to the base of the wing by black bars on the costal and near the inner margins of the wing, and the yellow space left is sometimes almost completely filled in with black. The form with considerable yellow on the disk of the wing is, however, the one that Grote had before him when he named

persephone. Since, as above mentioned, both sexes of the yellow form occur, it is fair to assume that the blacker form is the male of *anna*. Indeed, as is shown by the extreme form of *persephone* (Fig. 5), there seems to be little doubt that occasionally males with wholly black wings do occur. In Fig. 3 is shown a specimen of typical *persephone*. From it will be seen the gradation into typical *anna*.

EXPLANATION OF PLATE VII.

Fig. 1 *Apantesis anna*, yellow form male.

Fig. 2 *Apantesis anna*, yellow form female.

Fig. 3 *Apantesis anna* v. *persephone*, typical male.

Figs. 4 and 5 *Apantesis*, intermediates between *persephone* and *anna*, males.

Fig. 6 *Apantesis anna*, typical female.

A new Aberration in Phyciodes (Lepid.).

By HERMAN H. BREHME, Newark, New Jersey.

(Plate VII, figs. 7 and 8.)

Phyciodes picta Edw. ab. **jemezensis** n. ab.

Above: Primaries black; three small fulvous spots in the discal cell; an outer row of six pale spots, the last two of which are fulvous and rather obscure; this row of spots is succeeded by a broken shade line of a yellow color which in the normal form of *picta* is almost absent. Secondaries also black, with an angular, rather broad fulvous band crossing the wing about one-third out. The band originates a little below the costa and extends only to a little below the cubital vein. An outer row of three or four very faint fulvous spots followed by an equally obscure whitish shade line more pronounced near the inner margin. Fringes of both wings as the normal form. Beneath as in normal specimens, but the black markings of the primaries are more suffused and the fulvous spots form a continuous band passing through the center of the wing. Two rather small brown spots which are not present in normal specimens are near the center of the yellow hind wings.

Type.—One male in the collection of the author.

Habitat.—Jemez Springs, New Mexico, June 21, 1912.

This handsome aberration was bred by Mr. John Woodgate along with numbers of the typical form.

EXPLANATION OF PLATE VII.

Fig. 7. Upper side, Fig. 8. Under side, of *Phyciodes picta*, n. ab. *jemezensis*.

Fragments on North American Insects—IV.

By A. A. Girault, Nelson (Cairns), North Queensland, Australia.

1. **Duration of the Pupal Stadium of Lucanus placidus (Col.)**

A nearly grown grub of this beetle was found just under the surface of the ground at the base of a stump at Blacksburg, Virginia, July 10, 1902. It was suitably confined, formed the prepupa about August 1, pupated on August 3 and became adult not until the sixth of October. It was not fed and died on October 21.

2. **Asymmetry in Telea polyphemus Cramer (Lep.)**

Two hundred and thirty-five eggs were deposited by a female of this species captured August 7, 1902, at Blacksburg, Virginia. A full-grown caterpillar taken from an oak tree on August 26 had the spiracle on the left side of the eighth abdominal segment missing, being replaced by a wartlike protuberance. Also, on the same side of the meson, in the lateral aspect, there were only seven of the oblique yellow stripes present, while eight were on the opposite side; the missing stripe was correlated with the missing spiracle; to complete the symmetry there should have been a stripe on the eighth abdominal segment. This caterpillar appeared to be parasitized, since there were present also several black-rimmed holes on one of the thoracic segments.

3. **Duration of Egg Stage of Prionoxystus robiniae (Lep.).**

Nine eggs deposited by a female captured at light, late P. M., June 2, 1902, hatched late P. M., June 17, 1902, or after about fifteen days. The larvae refused foliage of all kinds, but accepted twigs of locust. Blacksburg, Virginia.

4. **Epargyreus tityrus (Lep.)**

The caterpillars of this butterfly were very abundant at Annapolis, Maryland, during the latter part of September, 1902, on locust. They live singly in a cocoon-like shelter formed by tying together two leaves. When feeding they leave the shelter and this is usually done at night, though in the day an occasional larva may be seen crawling about. From several lar-

vae confined on September 25, three chrysalids were obtained two days later. The adults did not issue until the following June. Pupation occurs within the larval shelter.

5. **Pentilia misella (Col.)**

Pupae of this minute ladybeetle formed October 28, 1902, emerged November 19, 1902, at Salem, Virginia. About October 20, 1902, larvae were still numerous, but all had practically disappeared by the first of November.

6. **Nadata gibbosa (Lep.)**

A caterpillar of this species was obtained at Blacksburg, Virginia, June 23, 1902, from the trunk of an oak; it molted on June 30, losing the anal loop of yellow. On July 2 it commenced to construct a cocoon, completing it on July 4; July 6, pupa present; July 16, the adult emerged.

In the penultimate stadium the caterpillar is smooth and pale bluish green with red spiracles, large, prominent, broad, grayish head and a loop of yellow around the caudal margin of the anal shield. Also a few pale longitudinal stripes along the dorsum. A larva obtained crawling over the ground August 13, 1902, made a cocoon on August 15 and the chrysalid was formed on August 18. The pupa hibernated.

7. **Coleoptera Reared from Bullet Galls, Holcaspis.**

During early March, 1903, at Blacksburg, Virginia, a small number of the old, vacated galls of several species of *Holcaspis* from oaks were kept in confinement with the result that several insects were obtained from them. On June 13, the lot was examined. The beetle *Otidocephalus laevicollis* Horn, as identified by Schwarz, was obtained in six instances. Two had already emerged, while four others were found when the galls were opened; they were within the larval case of the cynipid, the exit-hole of which was plugged with frass. The larvae of this beetle probably feed upon the substance of the gall, using the larval case of the cynipid for pupation. A single adult of *Hypothenemus dissimilis* and three of *Hemiptychus castaneus* were also obtained. These were likewise identified by Schwarz.

8. **Polynema psecas Girault (Hymen.)**

I have a single additional female specimen of this rather rare Mymarid captured in turf at Urbana, Illinois, April 22, 1909 (J. D. Hood). The second funicle joint was wholly black like the joints following it.

9. **A New Locality for Polynema consobrinus Girault (Hymen.).** Mr. R. L. Webster has also sent me a single male specimen of this species on a slide labelled "On leaves of *Ptelea trifoliata,* associated with *Empoasca flavescens,* Ames, Iowa, July 15, 1911." He suggests that it may be parasitic upon the eggs of the *Empoasca;* the suggestion is probably true.

Last Year's Work with Catocalae and other Lepidoptera.

By R. R. Rowley and L. Berry, Louisiana, Missouri.

As in the previous spring, the eggs of Catocalae were kept cool till a supply of young leaves was ready for the hatchlings, and the earliest larvae were those of *innubens* that emerged on the 5th of May, followed on the 7th by those of both *retecta* and *luciana.*

May 12th, a larva of *C. luciana,* feeding on willow and five days old, having hatched May 7th,

was nearly one-half an inch long, brown along the side, indistinctly striped longitudinally with lighter. Dorsum light with mid-longitudinal white or cream-colored band or stripe. Head a little flattened above, light brown or chestnut. The two hind prolegs only full length, the two pairs in front being short and unused, the front pair the shortest.

The larvae before the first moult is dirty ground color with a tinge of green. Head large and bright chestnut color.

May 18th, larva of *C. luciana* three-fourths of an inch long, tan or light brown with a flattened head like that of *cara* having a lateral black dash from the center above to the mouth. Inside of the dashes the color is brighter than that of the body. Dorsum lighter than the body color. A slight hump over the third pair of prolegs in a black cross band or patch as in *cara.* The 8th dorsal pair of tubercles stronger than the rest and black laterally. The mid-dorsal line quite yellow. The larva described was nearly an inch long. Others of a second lot but half an inch long and light brown.

May 23rd. The larvae of *luciana* one and one-fourth to one and one-half inches long, light brown. The head as in *cara,* flat and with lateral black dash or streak and inner elongate ellipses, two in number surrounded by narrow black. The true legs are a little lighter than the body color. The hump over the third abdominal prolegs is low, deeper brown with yellow crest. The tubercles are reddish brown. The last

two pairs of prolegs are very light, almost cream color, outside flanked by very dark brown.

On May 26th larvae of *Catocala luciana* after 4th (?) moult, somewhat lighter color than before the moult, but taking on a grayish tinge, a day or two later. The hump over the third pair of prolegs red brown. Head, the same color. Lateral setae short but thick. The larvae at this time were nearly two inches long.

May 29th. Grown larvae of *Catocala luciana* two and one-half inches long, light brown, with a reddish tint. Tubercles deeper red brown. Head, as in *cara* with yellow lobes above and a lateral brown facial dash. The true legs, body color. Prolegs slightly browner. The body indistinctly lined longitudinally. Lateral setae very short.

There are two colors that prevailed among the larvae, one light reddish brown and the other slightly bluer or with a leaden tint.

It is proper to state in this connection that the chrysalids from these larvae gave two types of imagoes, possibly distinct specifically. The eggs were laid by two females and sent to the senior author, the autumn before, from Denver, Colorado.

At the time the senior author visited the locality on the Platte River and took numbers of the moths under the wagon bridge over that stream, none other than *luciana* were seen among the scores that were frightened from their hiding places. It was hardly more than a week from that time that Mr. Dulany obtained the females that laid the eggs mentioned above.

On June 1st there is this record on *luciana*. Larvae very light gray with a small, somewhat darker cross hump over the third abdominal prolegs. The darker larvae remind one of *parta* caterpillars, the lighter ones of *concumbens*. The first larva began spinning under paper on the above date, 25 days from hatching.

The larvae of *C. luciana* spun from the 1st to the 6th of June while the *retecta* began on the 5th.

The pupae of *Catocala luciana* gave the first imagoes of that species on July 3d. Both were males. This is nearly a month earlier than the species appears in Colorado. The chrysalis period of this moth is one month as the larvae of these two moths pupated in the first week of June.

The first female imagoes of *C. luciana* emerged on the 6th of July.

The larva of *C. luciana* spins a thin cocoon in leaves like that of *cara* and others, and the pupa is brown, covered by a whitish pruinescence as in *cara*.

The *innubens* larvae, as in past years, were little trouble to rear, being perfectly healthy, and rapidly matured, but, from crowding in the jars, were a little undersized. All were *hinda* as was their mother. Among the earliest moths taken in the woods in the last three years by the senior author were a few beautiful specimens of this variety with a white spot set in a faintly purplish fore wing.

On his first visit to "Catocala Hollow," June 27th, George Dulany took two *hinda* along with *ilia* and *epione*. During the succeeding two or three weeks this same moth was found abundant, resting on the tree trunks near the ground, often half a dozen of them flying off on our near approach. One small tree especially seemed to be very attractive to these "Cato-moths" and equally attractive to us as we took some beauties there. This was near the entrance to the hollow, where trees were few, a little to the left of the path just as it ascended a steep hillock, in a clump of bushes and young trees.

The larvae of *Catocala innubens* that hatched May 5th began spinning in the honey locust foliage in three weeks and were chrysalids in a month from the time they began eating.

The first imago of *Catocala innubens* from bred pupae emerged June 27th.

On the 8th of May the eggs of *Catocala vidua* hatched.

On June 8th many of the *vidua* larvae were passing their last moult and were nearly two and a half inches long.

After moulting, the caterpillars are very light pinkish gray with indistinct longitudinal lines and bands of darker dots. The cross band between the third and fourth prolegs on the dorsum, very dark brown. Lateral setae about as long as in *retecta*. The head, pinkish brown with cream-colored longitudinal wavy lines. No cheek dash of black but the front edge of the head shield is black. Tubercles flesh color. True legs, flesh color. The underside of the body is pale greenish with a midventral row of black spots.

Some days after the last moult, the larvae of *C. vidua* present white ventral surface with central row of black spots in red brown spots.

June 14th. Full grown larvae of *C. vidua* are three inches long, ashen gray with cream-colored tubercles. A row of lateral setae. The body covered by minute black dots that more or less arrange themselves in longitudinal lines that outline indistinct longitudinal bands, thirteen in number. A dark cross band over the dorsum between the third and fourth pairs of prolegs. The true, as well as the prolegs, are body color. Head, light gray with red brown irregular lines. A slight black dash either side of the mouth. Some specimens have a slight reddish tint while others are slightly darker gray. All larvae before the last moult are reddish.

On the 15th of June the first *vidua* larva began to spin.

From overcrowding, disease carried off a number of the larvae of *vidua* and *pernyi*.

The larvae of both *vidua* and *retecta* likewise spin their cocoons between leaves and the pupae, as in other species, are brown, covered by a white pruinescence.

The first imago of *Catocala vidua* emerged on July 20th, a full month after pupation, allowing five days between spinning and pupation.

On May 26th the larvae of *Catocala retecta* were about two inches long.

On June 1st, about two and three-fourth inches long, dark uniform gray with a broad, illy-defined cross, dark brown band between the 3rd and 4th abdominal segments. These larvae hatched May 7th.

June 8th. The larvae of *C. retecta* fully grown, measuring two and three-fourth inches, light gray with longitudinal lines of wavy dots and dashes. The cross band between the third and fourth pairs of prolegs, somewhat darker than the general body color. The tubercles cream color. Lateral setae present. The head has the color of the rest of the body, with black cheek dash. The logitudinal dark lines form narrow bands.

A larva of *Catocala minuta*, found feeding on honey locust by the junior author, was one and three-eighths inches long on June 6th, dark brown with light gray patches. Head, small, gray, flat. A slight hump over the first abdominal segment with a minute black dot on each side. The hump is gray. There is a cross hump between the second and third abdominal prolegs on the dorsum, gray in front and darker behind with a small white crest. There is a lateral row of short setae. A sharp crest is over the eighth abdominal segment as in other *Catocala* larvae. The ventral side is pale green with a row of medial black spots.

The larva of *Catocala minuta* spun on June 7th and the pupa gave an imago on June 30th.

On the same day, May 23d, eggs of *Smerinthus ophthalmicus,* received from Mr. E. A. Dodge, of Santa Cruz, California, hatched. The young larvae were white with large, greenish heads and strong brown caudal horns, curved backward. The eggs were small, and often with red rims, as in ova of *Sm. geminatus, myops, modesta* and *excaecatus.* In fact, *ophthalmicus* eggs are hardly distinguishable from those of *excaecatus* in size and shape.

May 29th. Larvae of *Smerinthus ophthalmicus,* hatched on the 23rd, moulted for the first time on the 27th. After the first moult the "worm" is light green with a light, almost white lateral line. Head pointed above. Caudal horn strong, directed backward, yellow green with a rich red brown line at the base. The horn nearly half an inch long.

June 2nd. Larva after second moult, three-fourths of an inch long, light green with light toothed lines. Caudal horn light with faint violet at the base. Head, triangular. Much like *excaecatus.*

The larvae moulted the third time on June 7th. After the third moult, the larvae are one and one-fourth inches long, dark green with pale yellow, toothed sphingial bands or lines. Small pale yellow granules cover the body. The head is blunt triangular, hardly sharp at the apex, dark green with strong yellow facial lines (one to each side). The last sphingial band extends to the base of the caudal horn and is stronger and yellower than the other bands, except the facial bands. The caudal horn rather strong, medium length, directed backward and but little curved. The horn is rosy on the sides and behind nearly to the apex where it is yellow green. The front side of the horn is blue. The true legs are rosy with green bases. The prolegs are of the body color. The caudal shield has a yellow edge.

On June 16th the larvae were two and one-fourth to two and one-half inches long, yellow-green with lighter granules. Longitudinal lines that bound the dorsum and the sphingial bands are pale white or yellowish. The last sphingial band extends from the middle of the sixth segment to the base of the caudal horn and is strong and yellow. The head is triangular, rather sharp and bluish in front with lateral yellow band. The true legs are pale red. The caudal horn nearly straight, directed backward, blue in front and violet behind. Spiracles small, elliptical, almost black with yellow centers.

The first larva of *S. ophthalmicus* burrowed on June 16th. On the same date the *Smerinthus geminatus* larvae began burrowing.

The mature larva of *Sm. ophthalmicus* burrows about as deeply as that of *excaecatus* and the chrysalis is about the

same size and color as that of the latter, being one and one-half inches long, thick, dark brown, probably as dark as that of *geminatus*.

The first two imagoes, male and female, of *ophthalmicus* emerged during the night of July 8-9 and both were deformed, twenty-one and twenty-two days from burrowing or fifteen to sixteen days from pupation.

The deformed female *ophthalmicus* laid one hundred and thirty-two eggs, a number of which were infertile. A part of these eggs were sent to the junior author, who secured imagoes from them, while the senior author signally failed to rear the larvae of the rest.

On July 10th two splendid females of *ophthalmicus* emerged.

Eggs of *Sm. ophthalmicus* hatched six days after they were laid. In color the egg is pale yellow, a little flattened, elliptical and usually with a peripheral red streak halfway around.

The deformed female *Sm. ophthalmicus* died the night after she laid the one hundred and thirty-two eggs, or two days after emergence. The deformed male companion to the female died four days after emergence.

On the same day that the *retecta* and *luciana* eggs hatched, May 7th, the ova of *Antherea pernyi* gave larvae and, on the afternoon of that day, those of *Cricula andrei*. These latter two are Asiatic Saturnids, the first a second cousin of our own splendid *polyphemus* and the other distantly related to *io*, possessing his stinging qualities.

On the 12th of June the first larva of *Antherea pernyi* began to spin, thirty-six days after the first eggs hatched. On the 13th four larvae of *Cricula andrei* began their cocoons, thirty-seven days from hatching.

The larvae of *Antherea pernyi* and *Cricula andrei* continued to cocoon till June 26th and those of *Catocala vidua* till the 29th.

The first *A. pernyi*, a female and deformed, came from the cocoon on the 14th of July. A male of that species emerged at 4 o'clock P. M. the same day and these were all that the fifteen or sixteen cocoons ever gave. After spinning, the larvae died without pupating. Allowing six to eight days after

beginning the cocoon before pupating, the chrysalis period of *pernyi* is about twenty-four or twenty-five days.

The first imagoes of *Cricula andrei* appeared on July 10th, twenty-seven days from the time they began spinning their cocoons.

The first imago of *Cressonia juglandis* from autumn chrysalis emerged on the 29th of May.

Eggs of *Catocala relicta* furnished by the junior author hatched on the 23d of May.

From captured females of *Sm. excaecatus* and *geminatus*, ova were laid respectively on the 18th and 22d of May and the larvae hatched and in due time pupated, those of the former failing to a one to give imagoes in the summer and autumn, while the *geminatus* chrysalids yielded moths in July.

Eggs from a captured female *polyphemus* were laid May 20th.

May 25th, eggs of *Actias luna* hatched.

The first imago of *Everyx versicolor* from pupae received from New Jersey emerged May 25th.

June 15th, I found two larvae of *Catocala neogama* and one of *C. piatrix* between shingles leaning against a small walnut tree. All three of these were small, probably past second moult. We have referred to the shingle trap in a previous paper on *Catocala* larvae.

Mr. George Dulany took imagoes of *Catocala epione, ilia* and *innubens* in the woods on June 27th.

On June 28th, the senior author, accompanied by Mr. Dulany, visited "Catocala Hollow" and took seven *Catocala epione,* two *polygama,* two *innubens* and sixteen *ilia,* including a white spotted one of the latter species. At the same time we took a *Ceratomia undulosa* moth.

The first larva of *Smerinthus excaecatus* burrowed on July 1st.

Imagoes of *Sm. geminatus* emerged on July 5th, twenty days from burrowing and fourteen or fifteen days from pupation.

On July 6th, took in the woods, in addition to species captured on the previous day, two beautiful specimens of *Catocala*

insolabilis and saw a specimen of *ultronia*. The *insolabilis* were taken on a small linden tree.

The first *Catocala piatrix* larva spun on July 9th. The first imagoes of *C. retecta* emerged on July 10th, about thirty-five days from burrowing or thirty days from pupation.

The first imago of *Citheronia regalis* emerged on July 4th.

A second *regalis* slipped its chrysalis skin on the 9th of July. On July 5th, in company with Ralph Dodge, the senior author took, in the woods, *C. innubens, scintillans, amica, neogama, palaeogama* and a fine *parta*. Ralph captured two fine *nebulosa* and a number of *ilia* and *polygama*.

The first *C. neogama* from a chrysalis was on July 11th.

Captured a fine male *regalis* at light on July 20th.

The senior author took a few *Catocala residua* in the woods from July 20th to August 10th. The pupal state of *Catocala relicta* is about sixteen to eighteen days.

Moths of the second brood of imagoes of *polyphemus* from July 20th to 26th, the eggs having been laid in May. The imagoes of the second brood are redder than those of the first or spring brood.

The first *Catocala cara* taken in the woods in 1912 were captured on the 27th of July. The first *lacrymosa* on the same day, a fine *evelina*, and saw the first *viduata*. The first *retecta* was taken on July 29th, as also the first *phalanga* and *habilis*.

On the same date took three other *lacrymosa* and a splendid *viduata*.

On the 29th, the senior author took in the woods, thirteen species and two good varieties of *Catocala*.

The cocoons of the second brood of *polyphemus* gave imagoes in from twenty-five to twenty-seven days from the time the larvae began to spin.

July 29th was the best *Catocala* day of the season. The weather was warm, dry and cloudless and numbers of the moths were low on the tree trunks. On the 31st, a day in every respect a duplicate of the 29th as to weather, few moths were to be seen in the woods, and they were mostly high on the trees.

On July 31st, a single specimen of *Euparthenos nubilis* was taken in "Catocala Hollow."

A brood of *Papilio philenor* larvae feeding on *Aristolochia sipho* and *serpentaria* in the back yard of the senior author were ready to pupate on the 4th of August.

The first *vidua* of the season in the woods was taken on the 16th of August.

A full grown larva of *Catocala piatrix* was found feeding on walnut, August the 9th.

Sugaring on the night of the 17th of August, a number of specimens of *Catocala cara, vidua, habilis, retecta* and *residua,* two hawk moths and a number of Homoptera were taken by the senior author and Mr. G. W. Dulany.

On September 14th, accompanied by Prof. F. E. Alsup and Harold Davenport, the senior author took one *Catocala robinsoni,* the first of the season, battered specimens of a number of other Catocalae, *Deiopeia bella* and larvae and chrysalids of *Anaea andria.*

The rest of the season was spent rearing larvae of *Anaea andria,* the last of which pupated October 18th.

In much of the work of rearing larvae, during last summer, the Senior Author was kindly assisted by Mr. G. W. Dulany.

Seven New North American Bees of the Genus Halictus (Hym.).

By Mrs. Marion Durbin Ellis, Boulder, Colorado.

During the study of some material of the genus *Halictus,* in the collection of Professor T. D. A. Cockerell, the following new species were distinguished. These species all belong to the sub-genus *Chloralictus* Robertson and are further characterized by the more or less distinctly metallic, green or blue abdomen. The work was done in the Zoological laboratory of the University of Colorado, under the direction of Professor Cockerell.

Halictus succinipennis sp. nov.

♀.—length about seven (7) mm. Head, thorax, and abdomen, metallic green. Face much longer than wide, slightly concave toward

the antennal fossae; clypeus produced half its length beyond the lower margin of the eye; face opaque except over the clypeus and frons, at the lower tip of the median carina; very closely punctured above and finely roughened below. Mesothorax opaque throughout, rather finely and very closely punctured, and finely roughened; parapsidal grooves short, median groove distinct, much deeper in front. The disc of the scutum blue-green, the scutellum and postscutellum brassy-green. Basal area of the metathorax with a low, rounded, finely roughened rim with numerous very crooked rugae, which are straighter and more distinct near the sides. Tegulae pale testaceous. Wings amber hyaline; stigma and nervures pale testaceous. Tarsi dark brown. Abdomen rather broad and blunt, rich metallic green; the disc of even the first segment finely punctured; the very narrow apical margin of each segment testaceous, segments 3 to 5 densely covered with short, closely appressed, pale grayish or whitish hair. Pubescence comparatively abundant and whitish throughout, somewhat ochraceous on the legs and scutellum.

Hab. Florissant, Colorado, two (= type), 6.9 mm. long, on sand, June 14, 1908 (S. A. Rohwer); one nearly 7 mm. long, June 21, 1908, (S. A. Rohwer) one 7 mm., June 23, 1907 (S. A. Rohwer).

This species is very near *H. pruinosus* Rob. from which it differs in the yellow wings, and finely punctured disc of the first abdominal segment. The pubescence of the abdomen is not yellow as in *H. pilosus* Sm.

Halictus pavoninus sp. nov.

♀.—Head and mesothorax dark, greenish blue; basal area of the metathorax and the abdomen darker blue. Head a little longer than broad, narrowed below and with the clypeus produced so that the face appears triangular, eyes narrow; face finely and closely punctured, only the frons and clypeus shiny; under side of the flagellum dusky testaceous. Mesopleura with shallow, coarse, irregular punctures; upper end of the metapleura with three or four irregular plicæ directed toward its upper anterior angle; mesonotum somewhat shiny in spite of the numerous, close, rather fine punctures. Basal area of the metathorax without a rim, the edge broadly rounded and finely roughened, slightly indented at the middle, plicae weak, numerous, and irregular. Tegulæ pale testaceous, darker at the base. Wings brownish hyaline; third submarginal cell one and one-half as wide as the second; stigma dusky testaceous, nervures dusky testaceous to dark brown on the costal nervure. Legs black to piceous, inner spur of the hind tibia with a series of four or five graduated teeth. Abdomen

sharp behind; disc of the first segment very shiny, the others a little less so, all the segments very finely punctured, less conspicuously lineolated; apical margins of the segments testaceous; discs of segments 4 and 5 and the sides of the other segments covered with thin, short, pale gray hairs, thicker and more ochraceous around the anal rima. Pubescence scant, not very dense even on the legs, where it is pale yellowish gray; whitish below.

Hab. Tolland, Colorado, altitude 8,900 ft. one (= type) 6 mm., near the Mountain Laboratory.

This species seems to be related to *H. veganus* Ckll., from which it may be distinguished by the longer face, and the closely punctured mesonotum which is not opaque with fine lineolations.

Halictus lazulis sp. nov.

♀.—Length about six (6) mm. Much like *H. pruinosiformis* Crawf. in general contour, rich peacock blue throughout. Face very slightly longer than broad; opaque, the punctures moderately coarse and very close; the small tubercle beneath the eye and those at the outer corners of the clypeus well developed; clypeus produced, so that three-fourths of it lies below the lower margin of the eyes; color on the under side of the flagellum pronounced. Mesothorax opaque, rather coarsely and very closely punctured; median groove of the disc distinct, parapsidal grooves poorly developed. Metathorax with a low, narrow rim, indented at the middle, around the comparatively broad basal area; basal area with a middle ridge decidedly pronounced, the plicæ just on either side of this central one irregular and very weak, but becoming more distinct laterally. Tegulæ testaceous. Wings amber hyaline; stigma pale testaceous, the nervures rich reddish brown to testaceous. Legs black to piceous; inner spur of the hind tarsi with three large and one small clavate teeth. Abdomen not stout, acutely pointed behind; very shiny, finely punctured and openly lineolated dorsally; ventral side and narrow apical margins of each segment, above, dark testaceous; segments 4 and 5, and sides of segment 3, with rather dense, short, closely appressed, pale greyish hairs. Pubescence very scant except on the legs and abdomen; pale grey tinged with buffy above, more whitish below.

Hab. Florissant, Colorado, one nearly 6 mm. on sand, June 14, 1907 (S. A. Rohwer); one about 6 mm. long at flowers of *Argentina anserina* (L.), June 23, 1907. (S. A. Rohwer).

This species looks more like *H. pruinosiformis* Crawf. than any other, but is easily distinguished by its amber wings, closely punctured disc of the mesothorax, and dark blue color.

Halictus tenuis sp. nov.

♀.—Length, 5 mm. A small slender species, metallic blue throughout. Facial quadrangle a little broader than long, clypeus short but distinctly produced, face finely and very closely punctured, opaque except on the almost impunctate frons and on the clypeus; flagellum tinged with yellow below. Pleuræ rather coarsely but not sharply roughened, metapleuræ with five or six, very weak plicæ near the upper end; mesonotum almost opaque with fine scattered punctures and very sharp, rather coarse lineolations; median groove deep, parapsidal grooves not developed. Basal area of the metathorax, almost as broad as the scutellum, the margin rounded, a little elevated near the middle; the surface sharply lineolated, a few very weak, irregular, reticulate rugæ near the base, the middle one straight, and somewhat stronger. Tegulæ brown in the middle, almost hyaline at the edge. Wings light brownish hyaline, third submarginal cell almost twice as wide as the first; stigma dusky honey color, nervures darker, costal nervure dark brown. Legs black, tarsi dark testaceous. Abdomen shiny, with very fine scattered punctures and very fine lineolations, margins of the segments testaceous. Pubescence scant except around the anal rima and on the legs; pale gray below, faintly buffy above.

Hab. Sugar Loaf Mountain, Colorado, altitude 8,500 ft. one (= type) 5 mm. long, May 18, 1907 (S. A. Rohwer).

This species is much like *H. veganus* Ckll., from which it differs in being blue, not green, and in having no distinct rim around the basal area of the metathorax; it also resembles *H. pruinosiformis* Crawf. from which the well-separated, finer punctures, and the sharper, more distinct lineolations of the mesonotum, and the very weak rugae of the basal area of the metathorax, distinguish it.

Halictus umbripennis sp. nov.

♀.—Length, 7 mm. Head and thorax metallic, olive green, abdomen quite as metallic, but more brown. Facial quadrangle as broad as long, somewhat shiny, although finely and closely punctured; clypeus only a very little produced, its apical two-fifths purplish black; flagellum not conspicuously colored below; cheeks shiny, the punctures fine and scattered. Mesothorax shiny throughout; median groove of the mesonotum deep in front, but scarcely evident behind the tegulæ, parapsidal grooves distinct but not deep; disc with very fine scattered punctures (not quite so smooth as *H. zephyrus* Sm.), and with microscopic lineolations; scutellum almost impunctate; postscutellum closely punctured. Metathorax without a salient rim, broadly rounded from above down-

wards, and very shiny; the basal area narrow, finely roughened, and with very few (less than twenty), short ridges. Tegulæ brown. Wings dusky hyaline, with a faint cloud toward the apex; stigma and nervures almost black. Femora shiny black; tibiæ and tarsi brown, and with ochraceous pubescence. Abdomen rather broad and blunt, shiny throughout; discs of all the segments very finely punctured, their apical margins impunctate but distinctly lineolate; those of segments 2 and 3 appear a very little contracted, so that the rest of the segment bulges slightly above the margin. Pubescence very scant, whitish below and buffy above.

Hab. Quirigua, Guatemala, one (=type) nearly 7 mm. February 1912, (Mrs. W. P. Cockerell).

This species is most closely related to *H. zephyrus* Sm.; from which its larger size, olive color, absence of testaceous margins on the abdominal segments, and the almost black nervures of the wings, easily distinguish it.

Halictus cattellae sp. nov.

♀ Length 7 mm. Head, mesopleurae and metathorax, blue green; mesonotum brassy, olive green; abdomen very dark olive green, the apical margins of the segments dark brown. Facial quadrangle about square; lateral margins of the clypeus free, the lower corners of the eyes long; face opaque, finely and very closely punctured above the antennae, less closely punctured but finely roughened below. Mesopleura coarsely punctured; the upper half of the metapleura with short irregular plicae crossing it at right angles; mesonotum opaque, rather coarsely, and closely punctured, and finely and sharply roughened, median and parapsidal grooves long but not deep. Basal area of the metathorax narrow, its edge broadly rounded, slightly elevated and indented at the middle, finely lineolate, and with a few short, simple plicae. Tegulae dark testaceous. Wings dusky, amber hyaline; costal nervure reddish brown, stigma and other nervures dusky honey color. Legs piceous to black, tarsi reddish brown. Abdomen broadest at the second segment; very shiny throughout, punctures very fine and widely scattered on the discs of all the segments, even less distinct on the first; the dark brown apical margin of each segment almost impunctate. Pubescence scant except around the anal rima and on the legs; ochraceous above, more whitish below.

♂ Length 7.5 mm. Like the female in sculpture and color of the thorax and venation and color of the wings. Face and abdomen brassy like the mesonotum. Clypeus much produced, entirely brassy like the face, labrum pale yellow, entire under side of the flagellum ochraceous. Tegulae light testaceous, legs black to dark brown, knees

and tarsi light testaceous. Abdomen slender, the end blunt; discs of all the segments finely punctured and inconspicuously lineolate, the apical margins and the ventral side of the segments dark brown. Pubescence rather scant, deep ochraceous on the vertex and dorsal half of the thorax, and pale gray on the face, cheeks and legs.

Hab. Garrison, New York, one ♀ (=type), nearly 7 mm. long, (Eleth Cattell); two ♀ nearly 7 mm. long (Eleth Cattell); Woods Hole, Massachusetts, one ♂ almost 7.5 mm. long, June, (T. D. A. Cockerell).

This species and the next seem more related to each other than to any other species; they probably belong to a group with *H. aquilae* Ckll., and *H. nymphaearum* Rob., since they all have plicæ on the metapleura. The very rough mesonotum suggests *H. pilosus* Sm., from which the short round face of *H. cattellae* distinguishes it. *H. cattellae* may be separated from *H. perpunctatus* n. sp. by the entirely shiny abdomen, and the few, simple plicæ of the basal area of the metathorax.

Halictus perpunctatus sp. nov.

Female. Length about 6 to 6.5 mm. Head and thorax metallic, blue-green, abdomen brown with more or less distinct, blue-green metallic reflections, the margins of the segments brown shading to pale testaceous on the edge. Face a very little longer than broad; clypeus produced, its lateral margins entirely free, the broad lower margin shiny black, toothed along the edge; face finely and closely punctured above the antennae, a little more coarsely and scatteringly below, frons and clypeus shiny; cheeks rather full and shiny, although finely punctured. Mesopleura with coarse scattered punctures of irregular shape; slender plicae crossing the upper half of the metapleura, becoming very weak and broken below the middle; mesonotum opaque, rather coarsely and *very closely punctured;* median groove well developed, parapsidal grooves faint. Basal area of the metathorax almost as wide as the scutellum; with a low, sharp rim extending well laterally; rugae strong and rather numerous, reticulate near the middle. Tegulae bright brown. Wings hyaline; stigma and nervures pale honey color, costal nervure darker. Legs black, shading to brown on the tarsi; inner spur of the hind tibia with two large and three rather abruptly, smaller, clavate teeth. Abdomen stout; disc of the first segment very shiny, the few scattered punctures very fine and shallow, disc of all the other segments with the punctures fine, sharp and close together; segments 3 to 5 closely

covered with thin, short, pale yellowish gray hair, the last four segments showing the metallic reflections more distinctly than the first. Pubescence only moderately scant, abundant on the legs; pale gray throughout.

Hab. Boulder, Colorado; one (= type) 5.5 mm. long, at flowers of *Claytonia rosea* Rybd., April 20 (T. D. A. Cockerell); one 6 mm. at the flowers of *Bursa bursa-pastoris* (L.), May 22, 1907 (G. M. Hite); one 6.7 mm. long, June 10, 1907 (G. M. Hite); one 6.5 mm. long at flowers of *Taraxacum taraxacum* (L.), April 16, 1908 (S. A. Rohwer); and Rito de los Frijoles, New Mexico, five 6 to 6.5 mm. long, August 1910 (W. W. Robbins).

This species probably belongs to the group of *H. nymphaearum* Rob. and is most closely related to *H. cattellae.* The closely punctured mesonotum distinguishes it from all the species of the group except *H. cattellae,* from which it differs in having a longer face, a rim around the basal area of the metathorax, and a closely punctured disc of the second abdominal segment. Individuals of *H. perpunctatus* with but little of the metallic reflection on the abdomen somewhat resemble *H. perdifficilis* Ckll. from which the broad basal area of the metathorax, the sharply lineolate mesonotum and the whitish, not yellowish gray of the pubescence on the abdomen separates it.

A Twelfth New Genus of Hymenoptera Trichogrammatidae from Australia.

By A. A. Girault, Nelson (Cairns), North Queensland, Australia.

LATHROMEROIDES new genus.

(Hymenoptera Chalcidoidea, Family Trichogrammatidae, Subfamily Chaetostrichinae, Tribe Lathromerini.)

Female.—Similar to *Lathromerella* Girault, but the antennal club only three-jointed and not terminating in a spinelike seta, the discal ciliation of the fore wing dense and together with the venation as in *Aphelinoidea,* the marginal cilia of the fore wing very short; moreover, the abdomen is very long and tubular, nearly twice the length of the head and thorax

combined, the very long ovipositor inserted at the base of the abdomen and distinctly projecting beyond the latter's tip for a length equal to about a seventh or eighth that of the slender, tapering abdomen. Stigmal vein merely a very short, foot-like projection from the marginal; postmarginal vein absent. Posterior wings with moderately long marginal fringes caudad, bearing five longitudinal lines of discal ciliation. Also resembling *Tumidiclava* Girault, but the abdomen is totally different, the antennal club does not terminate in a spine-like seta and is not so swollen, while the discal ciliation of the fore wing is dense and normal. The distal joint of the club forms over half the length of that segment. One ring joint; no funicle. Cephalic tibial spur present, short and straight. Tarsal joints rather long. Thorax with a median sulcus.

Male.—Not known.

In my table of genera *Lathromeroides* will drop in near *Pterygogramma* and *Uscana*, but the very long, tubular abdomen, very dense discal ciliation, very short stigmal vein and the distinctly exserted ovipositor readily distinguish it.

Type:—The following species:

1. **Lathromeroides longicorpus,** new species.

Female.—Length, 1.00 mm. Bright golden yellow, the eyes and ocelli bright garnet, the exserted portion of the valves of the ovipositor and a small, dot-like spot under the stigmal vein deep black, the distal tarsal joints and the antennae more or less dusky. Wings slightly embrowned under the venation. Legs uniformly pallid yellowish. Intermediate joint of cephalic tarsus shortest, the other two sub-equal; longest tarsal joint is the proximal joint of intermediate legs. Wings moderate in width, convexly rounded at apex. Proximal two joints of antennal club wider than long.

(From a single specimen, 2-3 inch objective, 1 inch optic, Bausch and Lomb.)

Male.—Not known.

Described from a single female specimen captured from a window, men's quarters, mill yard, Proserpine, Q., November 4, 1912.

Habitat.—Australia—Proserpine, Queensland.

Type.—No. Hy. 1271, Queensland Museum, Brisbane, the above specimen in xylol-balsam.

Standards of the Number of Eggs laid by Spiders—II.*

Being Averages Obtained by Actual Count of the Combined Eggs of Twenty (20) Depositions or Masses.

By A. A. Girault, Nelson (Cairns), North Queensland, Australia.

2. Theridium tepidariorum C. Koch.

No.	Date 1911	No. counted per mass	Successive Totals	Av. per Egg Mass	Max.	Min.	Range
1	Chicago, July 20	341.	341.	341.			
2		382.	723.	361.			
3		477.	1200.	400.	477.		
4		211.	1411.	353.			
5		244.	1655.	331.			
6		248.	1903.	317.			
7		233.	2136.	305.			
8		394.	2530.	316.			
9	Urbana, July 31	209.	2739.	304.			
10		221.	2960.	296.			
11		182.	3142.	286.		182.	
12		298.	3440.	287.			
13		217.	3657.	281.			
14		258.	3915.	279.			
15		381.	4296.	286.			
16		252.	4548.	284.			
17		296.	4844.	285.			
18		217.	5061.	281.			
19		249.	5310.	279			
20		232.	5542.	277.			295
20			5542.	277.	477.	182.	51

The first eight of these masses were collected in a small pumping station on the shore of Lake Michigan, Chicago, Illinois, July 20, 1911; the other twelve at Urbana, Illinois, July 31, 1911, in the cellar of a building on the campus of the University of Illinois. As many as three of the globular, brownish egg cocoons have been observed in a single web, but I believe that as many as five have been recorded. The average obtained then represents approximately what number of eggs will be found in each cocoon and not the average expectations from any single female which must be near from three to five times more. The numbers 3, 4 and 5, 6 and 7 respectively are each from one nest, so that we may be assured that a female may lay as many as 477, 455 and 481 eggs. It is also plain that one female may put as many eggs in one cocoon as another does in two.

* For the first of this series, see Ent. News, XXII, pp. 461-462, Dec., 1911.

Collecting Notes from the Great Basin and Adjoining Territory (Dipt., Col.).*

By J. M. Aldrich, Moscow, Idaho.

In the summer of 1911 I traveled about 5000 miles in a 62-day expedition having for its main object the study of the insects found in and about the western salt and alkaline lakes. Although I have published four articles on my results and have another in press, there are so many facts of entomological interest remaining that a more general discussion of the theme seems to be required. Much of my material outside the Diptera still remains unidentified, hence it is even yet impossible to give a list of the species collected. Nor do I think such a list wholly desirable, as it would contain only here and there a species of real interest, nine-tenths being comparatively common and widespread insects. The better way would be to enumerate only species not heretofore known in the territory under consideration, or those whose distribution is little understood. This plan will be pursued with the Diptera, while other orders must wait indefinitely.

The first three weeks of the trip were spent with a farmers' institute party from the University of Idaho, to whom had been assigned a schedule of institutes mostly in rather out-of-the-way places. Our itinerary took us to Payette Lake and down Long Valley to the southward, a fine collecting ground for all kinds of insects, and now becoming accessible through the construction of a branch railroad from Nampa. We were there too early, about June 20; nearly a month later would have been better. The valley is bordered on both sides by heavily timbered and snow-capped mountains, the summits being only a few miles from civilization, ideal for entomological work. Along the main line of the Oregon Short Line as we progressed eastward there is nothing of especial interest in the way of a collecting ground until Pocatello is passed. East of this point the railroad enters a mountain valley, and the entomological field is highly interesting until the Wyoming line is reached. We left the railroad at Montpelier and made

*Part of the results of an investigation made by aid of an appropriation from the Elizabeth Thompson Science Fund.

the interior points of St. Charles and Liberty. This also is a high country and it was early for good collecting. The next and concluding institute was at Malad City on July 3, and from here my trip of investigation began. I had collected so far only the following Diptera of special interest:

At McCall, Idaho, on Payette Lake, *Asemosyrphus mexicanus.*

At Council, *Atherix variegata.*

At Boise, *Heteropterina nasoni* and *n. sp.*

At Soldier, *Tabanus phaenops.*

At Bellevue, *Campsicnemus thersites, Dolichopus coquilletti, Chrysopila tomentosa.*

At McCammon, *Pelina truncatula, Tephritis clathrata.*

On the roundabout railroad trip into Malad, a day had been spent on a side trip to the Utah Agricultural College at Logan; while awaiting the train at Cache Junction, I collected *Dolichopus amnicola* and *Hydrophorus gratiosus* Ald. In Logan I found *Chiromyia (Scyphella) flava* common on a stable window.

At Brigham City, Utah, on July 4 and 5, I spent the available time at Box Elder Lake, an expanse of brackish, shallow water about two miles north of town. On the way thither along the railroad were great quantities of parsnip in bloom. On these I got three species of *Thereva* and specimens of *Helophilus similis* and *Sarcophila (Paraphyto) opaca.* Along the shores of the lake or pond I found a new species of *Lispa* (described in a forthcoming paper), also *Ephydra subopaca,* which breeds in the salt waters; in the adjacent grasses along a waste water ditch occurred *Melieria occidentalis* and a new species of *Pelastoneurus,* while I was attacked by *Chrysops discalis, fulvaster* and *moerens.* On the bare mud, where the lake had recently dried away, there were many specimens of *Cicindela echo,* somewhat difficult to capture from a bad habit of flying a long distance when flushed; they enter the shallow water fearlessly and run about in it where it is a quarter or three-eighths of an inch deep, capturing some kind of prey there. In this situation they are unable to take wing, and I picked up a few specimens from the water in my fin-

gers. This habit in a *Cicindela* was new to me. In the vicinity of the pond I got *Dolichopus afflictus,* which is unusual so far east, although it has been reported from Wyoming.

About Salt Lake City there is of course much to interest the entomologist. The electric line up Emigrant Canyon gives a ride up to about 7000 feet altitude for 80 cents, and should never be overlooked by collectors who visit the city in summer. Near the end of the line, high up in the mountains, I captured *Dolichopus n. sp., Tachytrechus n. sp.* and *Hydrophorus philombrius.* The shores of Great Salt Lake are easily accessible by going to Saltair or by taking the local trains which run out to Garfield and Smelter station next beyond. The local train turns round on a Y just beyond Smelter, and from this it is only a short distance to the shore of the lake. There is some brackish water in spots between, around which I collected, but the shore of the lake is a particularly rich field. *Ephydra gracilis* occurs by millions, the larva living in the water; *Ephydra hians* is also numerous in places on the shores, and likewise lives in the water in the larval stage. *Caenia bisetosa* occurs abundantly along the edge of the water, but its larva has not been found. The brackish water back from the lake has along its edges a beautiful new species of *Tachytrechus.*

I stopped off from morning until 5 P. M. at Promontory Point, almost in the middle of the lake, where I found essentially the same beach fauna as near Salt Lake City, adding *Rhicnoessa coronata.* The wife of the station agent kindly provided me with dinner, as there is no hotel. The same afternoon I continued across the lake to Lakeside on the west shore, where again the beach fauna is about the same. It is a sidetrack with a few railroad employees, the surrounding country an absolute desert. The main divide between the ancient lake basin of Utah and that of Nevada is a little east of Wells, Nevada, which was the point I selected for my next stop, having been informed that it was on the bank of a river. I had to inquire in the town, after a vain search, whether there was any water near, and was informed that there was a little seepage about a mile below town. It was 2 P. M.

when I got off the train, and I had already lost an hour, so I made what haste I could in the hot sun to the place indicated, where I found in a small space more new and interesting Diptera than I ever collected in the same time before. Within two hours the following and many more common species were obtained: *Anacampta latiuscula* and two new species; *Dolichopus ciliatus, amnicola, obcordatus* and five undescribed species; *Sphegina n. sp., Euparyphus n. sp., Asyndetus n. sp., Calobata pallipes, Palloptera jucunda, Diaphorus palpiger* and *opacus, Hydrophorus sodalis* and *magdalenae, Lispa tentaculata* and *uliginosa,* and some not yet fully determined. In accordance with my plans, I continued my journey at ten that evening, but there are some very attractive-looking high mountains a few miles south of Wells that had timber and snow upon them, which would in my opinion be one of the best collecting fields in the West.

Hazen, Nevada, was reached the next morning. A good hotel is the principal feature of the place, which consists principally of a few railroad employees. The Soda Lakes are about ten miles south, being some two miles from Mirage siding, on the Fallons branch. They are small bodies of very alkaline water, where quite a business was done in the manufacture of soda until the seepage from the new irrigating canals of the Truckee-Carson government irrigation project raised the level above the evaporating beds and put a stop to the enterprise. I stayed over night with the caretaker at the works and collected at the shore of the lakes *Ephydra hians* and *Caenia bisetosa,* as at Great Salt Lake. A single male of *Hydrophorus plumbeus* Ald. was found also, known previously only from a single female from Soap Lake, Washington. Around fresh or brackish seepage I found another new species of *Dolichopus, Hydrophorus aestuum* and *gratiosus, Pelastoneurus cyaneus, Thrypticus fraterculus,* and *Melieria occidentalis. Chrysops discalis* was occasionally present.

On July 14 I made a visit to Reno and called upon Professor S. B. Doten, whom I found much engrossed with his interesting investigation of the habits of Hymenopterous parasites, for which he has invented several ingenious pieces of apparatus; his devices for instantaneous photography under

the microscope are especially worthy of commendation. A short stroll around the outskirts of the town yielded *Thrypticus fraterculus, Chrysomyza demandata, Asemosyrphus mexicanus, Madiza* (*Desmometopa*) *halteralis* and some commoner things.

The next day I returned eastward to Wadsworth and took the stage 20 miles north to the Nevada Indian School, where the superintendent, Mr. J. D. Oliver, provided me with accommodations and I remained four days. The trip in was highly interesting to me, as I discovered a really garrulous Indian in the driver "Fat Joe," and we struck up a warm friendship. The school is four miles from Pyramid Lake and eight from Winnemucca Lake, both of which I visited. They are moderately alkaline, but contain large quantities of fish. There is a more alkaline pond a mile south of Pyramid Lake, but it was difficult to reach, as it was on the other side of the Truckee River and the water was high; so I did not visit it. The bottoms of the Truckee River are verdant in this desert region and offer some good insects. The shore of Pyramid yielded a few Lispas of an undescribed species, as well as *Ephydra hians;* at Winnemucca I found still another undescribed *Lispa* with several common species of the genus. Among the Diptera collected on my trips to and from the lakes and about the Indian school were *Chrysops discalis* and *coloradensis, Tabanus opacus, Exoprosopa eremita, Anthrax agrippina, nugator, lepidota, Ceria tridens, Tachytrechus angustipennis, Thrypticus fraterculus, Hydrophorus gratiosus* and *philombrius, Geomyza frontalis, Rhicnoessa albula, Urellia abstersa* and *Caenia bisetosa.*

On July 19 I returned to Wadsworth and took the train to Hazen, where I took the Goldfield train next morning to the little freighting station of Thorne, close to the south end of Walker Lake. An automobile conveys the passengers seven miles across a very sandy desert to the county seat town of Hawthorne, occupying a little oasis less than half a mile square. After dinner another auto stage runs before supper-time to Bodie, California, climbing over the Walker Lake mountain range, crossing a valley and ascending almost exactly to the summit of the next range, Bodie having an ele-

vation of 8400 feet. The road was good and our speedometer indicated 35 miles an hour on one down grade stretch, with seven passengers and a heavy load of mail, express and baggage. Bodie is an old, decayed mining camp with a few hundred inhabitants. Next morning a horse stage driven by a Mexican took me to one of my main objective points, Mono Lake, a distance of 22 miles. I stopped at the Mono Lake post-office and secured accommodations for a few days at the combined store, saloon, hotel, blacksmith shop and feed mill of Jack Hammond, about a mile beyond. Here I devoted my first attention to the insects of the lake itself. It is a highly alkaline body of water and contains vast numbers of the larvae of *Ephydra hians,* used in the pupa stage as food by the Indians under the name of "koo-tsabe." The specific identity of the fly had not been ascertained prior to my visit. Along the west side of the lake the shores rise abruptly into the Sierras, and there are numbers of rapid streams, large and small. The collecting is superb, and I could have spent more time to good advantage, but my plans limited me to four days. Besides some new species, the following are the more interesting results of my collecting: *Bittacomorpha sackeni, Tabanus opacus* and *phaenops, Thereva johnsoni, Tachytrechus olympiae* and *angustipennis, Nothosympycnus vegetus, Psilopodinus pilicornis, Sympycnus marcidus, Chrysogaster nigrovittata, Clausicella setigera, Notonaulax cincta* and *Themira putris.*

Mono Lake lies close against the east side of the main Sierras, directly east of Yosemite Park, which comes up to the divide, about 16 miles by trail from the lake. Parties not infrequently come down to the lake from the Park; in fact it is more visited from that side than from the railroad some 65 miles away to the eastward. When I was there the Sierras towering above it were covered with great fields of snow and I never saw a more picturesque view than the one looking down on the lake and across it to the mountains, from the range near Bodie.

On my return to the railroad I had to stay over night at Thorne, in order to have time to box up some freight for shipment. The hotel business mostly goes to Hawthorne, but I felt well repaid for any little inconvenience of my stay in

Thorne in making the acquaintance of "Doc" Stewart, mine host at the Old Crow,—an old-timer of the sixties, whose warm-hearted interest in me is a pleasant memory.

From Thorne I continued my journey to Southern California by an unusual route, as it was necessary to include Owen's Lake in the itinerary. I continued down the Goldfield railroad to Mina, where I changed to a narrow-gauge line that ends at Keeler, on the east side of Owen's Lake. I left this line at Owenyo, where it is joined by a Southern Pacific broad gauge branch that strikes the main line at Mojave, from which it is easy to reach Los Angeles.

We reached Owenyo about midnight, several hours behind time, and were accommodated in a box car hotel, the single men occupying hard bunks in an undivided car. Next morning the mixed train on the branch took me as far down as Olancha, which I had been informed would be a good point from which to inspect the west shore of the lake. It proved to be about five miles beyond the lake, so I put in most of the day collecting along a beautiful little mountain stream coming out of the Sierras and around some seepage near the lake. Diptera of interest were *Pelastoneurus dissimilipes, Tachytrechus auratus* and *Rhagoletis minuta*. Many insects of other orders occupied my attention and would be well worth recording if they had been identified. That evening I took the up train again to get to a point near the lake, and (accepting advice again) stopped off at Brier siding at 10 P. M., only to find that the ranch supposed to be there was at another siding and there was not a human being within miles except the Mexican boy who had driven down from the Los Angeles aqueduct camp to pick up any Slavs who might have drifted in to work on the ditch. The boy took me up to the camp and let me sleep on a few sacks on the ground. Next morning I secured breakfast with the laborers and walked to the lake, where I made what observations were necessary in time to leave again on the southbound train. The lake is densely alkaline and is full of the larvae of *Ephydra hians*.

The evening of this day found me in Los Angeles and the remainder of the trip may be passed over in a few paragraphs. In Los Angeles I collected carefully about the ponds of crude

petroleum in the oil well district for *Psilopa petrolei*; although I could not find the larva in the petroleum, I succeeded in getting the adults on grass around the pools. In the same locality was *Pelastoneurus dissimilipes*.

On the beach at Santa Monica were many specimens of a new species of *Stichopogon*, and on the surface of a brackish pool close to the beach was a swarm of *Ephydra millbrae*.

On the beach at Long Beach *Lipochaeta slossonae* was abundant.

At Lake Elsinore, an alkaline lake south of Riverside, I captured the same beautiful new species of *Tachytrechus* that I got at the south end of Great Salt Lake; also a single specimen of a new species of *Lispa*, of which I later secured a pair at fresh water at Lewiston, Idaho. *Caenia bisetosa* was the most abundant insect at the shore.

On the salt marsh adjacent to Palo Alto I collected several specimens of a species of *Canace*, a very peculiar sort of Ephydrid; also *Hercostomus metatarsalis*, *Pelastoneurus cyaneus* and *Hydrophorus aestuum*.

A two days' trip of a strenuous sort was made to Clear Lake, Lake County, Cal., from San Francisco, to ascertain what sort of *Ephydra* it was of which the larva had been named *E. californica* by Packard many years ago. As the lake is fresh water, and not salt as Packard had been informed, it was evident that the larvae came from some other water. I found that two borax ponds near the lake were well known, and made a visit to one of these, where I speedily found *E. hians*, which seemed to settle the identity of Packard's species. I also found the same large, undescribed *Lispa* which accompanied *hians* on the shores of Great Salt Lake.

The papers which I have published on the results of the trip are the following:

1. Larvae of a Saturniid Moth Used as Food by California Indians. Jour. N. Y. Ent. Soc., xx, 1-4, 1 pl.; Mar., 1912.
2. Flies of the Leptid Genus Atherix Used as Food by California Indians. Ent. News, xxiii, 159-163; Apr., 1912.
3. The Biology of Some Western Species of the Dipterous Genus Ephydra. Jour. N. Y. Ent. Soc., xx, 77-99, 3 pl.; June, 1912.
4. Two Western Species of Ephydra. Ibid., 100-103; June, 1912.
5. The North American Species of the Dipterous Genus Lispa. Jour. N. Y. Ent. Soc., in press.

The Appearance of an Unexpected Noctuid on the Atlantic Seaboard (Lepid.)

By H. Bird, Rye, New York.

In 1881 Grote described a western Noctuid, now classed an *Apamea,* as *Gortyna erepta,* his unique type being captured by Prof. F. Snow, in Douglas County, Kansas. This type found its way to the British Museum and the species seems not to have been met with since. Some years ago, during the lifetime of Prof. Snow, the writer corresponded with him in hopes of securing other examples from that locality, but while the professor remembered the insect very well, he had never learned of its capture again. Little were we aware that a fine colony was flourishing within ten minutes' walk of my door.

One of the largest grasses found at Rye is *Tripsacum dactyloides* L., and its occurrence seems confined to a few locations where the margin of upland and salt meadow meet, and is here subjected to inundation by the extreme high tides that occur at intervals. This strip of vegetation, rarely but a few feet wide, exemplifies a remnant of primitive flora which it is hard to duplicate elsewhere. The salty conditions render it unfit for cultivation, and it is allowed to remain waste, a sample of our only local, pre-Columbian, upland flora. It seems evident that *Tripsacum* obtains here due to this undisturbed condition, rather than that it likes a salty environment, since it follows the Upper Austral zone, south and westward, more than half across the country. A search of the grasses had been going on for some years to apprehend the larva of *Apamea americana* Speyer, or *A. nictitans* L., as some choose to consider it, reported to bore "grasses" by certain American writers. This is a generalized statement apparently and seems based on reports from European sources that there the *nictitans* forms have such a food habit. While many grasses, and *Tripsacum* in particular, had been under observation before, it was not till 1911 that a likely borer was found working in the latter, a form showing *Apamea* or *Hydroecia* characteristics, and supposed at the time of its discovery to be *americana* without doubt. It so happened on this occasion a

very high tide covered the meadows, and as we stood in water to our shoe tops while digging out a root containing several larvae, we were forced to conclude that the term *"atlantica"* as applied to our alleged insect by Prof. J. B. Smith, when he separated our forms on genitalic characters, was well chosen. If one might stand in the Atlantic Ocean and pluck its larva, surely it was aptly named. In due course, however, the moths appear, but instead of an Atlantic coast form we find the only insect with which it tallies is the Kansan *erepta.* Specimens were kindly compared by Sir G. F. Hampson with the British Museum type, and he reports they differ only in minor detail. While it may be hard to reconcile the habitats, as *Tripsacum* occurs in Kansas we may assume *erepta* feeds on it there, though it may be doubtful if a chain of the plants now exists across the country that the species could yet enjoy an uninterrupted range. Believing the local colonies are a stable variety of the type form, the varietal name *ryensis* is proposed for it.

Apamea erepta ryensis, new variety.

Head smooth in front, antenna of male finely ciliated, thoracic tuftings normal. The ground color is straw yellow, occasionally becoming more deeply ochreous in the primaries, powderings of wine-red or brownish scales are more or less diffused thereon and frequently interspersed with some black scales, the quantity of powderings producing some variation. Basal line vague, antemedial line irregularly

Male genitalia of *Apamea erepta ryensis.*

waved, transverse line rounded outward past reniform; these lines simple and defined in brown, subterminal line vague, a finely penciled black line at base of fringes; claviform wanting; orbicular usually wanting, rarely a vague ring; reniform a pure white lunule or angulated crescent in a black setting. Secondaries show ground color more or less diffused with black, the discal lunule and mesial line drawn in black powderings. The female is usually lighter due to less of the overlaid powderings.

Expanse, 34-35 mm.; size very constant.

Genitalia of male are of a unique pattern, departing materially from the *nictitans* group, and are best understood by a reference to the figure.

Type locality.—Milton Point section of Rye, inception of Forest and Stuyvesant Avenues, N. 85 deg., E. 302.5 meters; West Chester County, N. Y., U. S. A.

Forty bred specimens are at hand. A male type is so labeled in author's collection, and paratypes have been forwarded to the U. S. National and the British Museums.

The variety differs chiefly in the absence of a well-indicated orbicular. Knowing the value of genitalic comparisons in the closely allied species, where the differences of the imagos are slight, we feel there may be further departures from these characters of the type form.

The work of the larva is easily overlooked. *Tripsacum* sends up such a mass of culms that those dwarfed by the borers are soon overtopped by the normal growth. The young larvae, having hatched out about the first week in May, work down in the tender center of the culms, when they have grown but a few inches. The individual culms arise from hard nodules, or corms, arranged in a great spreading root-clump, and the boring is confined to the base, though never entering the corm. The dwarfed stem that arises does not develop a flowering spike, and the burrow is but a few inches in length. At first the frass is thrown out, later the gallery becomes rather clogged with it. The larva seems always tightly jammed in the boring, for the rapidly growing leaves enfold it in an ever tightening envelope. As the leaves conduct moisture down to their bases, these galleries get in a very unwholesome condition, and become congenial haunts for several dipterous species. Two of these are species of *Drosophila* apparently,

that find the fermenting frass a proper environment, another appears to be a Trypetid whose larva keeps among the frayed and broken leaf tissues. This same fly has been noted associated with *Papaipema nebris,* when the latter was boring corn. No parasites have been detected. The winter is passed in the egg stage without doubt, though this and the first larval stages were unobserved, and the species is single-brooded. The larvae were first met May 10, and the following stages observed:

Stage IV ? Head small, rounded, pale yellow, a dark spot at ocelli. Thoracic joints small compared to middle, as is anal extremity; sutures deep; color is whitish translucent, each segment except the first and twelfth showing a contrasting ring or girdle of purple brown on the anterior half, giving a peculiar and characteristic ringed appearance. The cervical shield is wider than the head, the anterior edge marked heavily and the posterior, rounded portion, penciled lightly in black; tubercles normal, do not show clearly on the dark rings, similar through last four stages; setae well developed for a borer; legs sixteen.

Stage V ? No change.

Penultimate stage. The purple rings not so dark, otherwise no change.

Last stage. Color of rings fades perceptibly, and are lost ventrally; tubercles not large, black; on joint two Xa and Xb seem defined in a small dark area but are without setae; Ia, Ib, IIa and IIb small but bear stiff setae, IV is largest, the size of a spiracle; on joint ten IV is very low down, and on eleven I and II enlarge, III and IIIa are separate, and on twelve I and II are fused, III, IV and V appear separated, all closely preceding the anal shield; leg-plates prominent and facing a little anteriorly; crochets on prolegs on joint nine number fourteen.

Length for the four stages: 14, 22, 28, 34 mm. respectively.

The pupal change does not occur in the gallery, but under a slight depth of soil. The pupa is very active, of brown color, surface shining, no frontal development, cremaster two sharp straight spurs.

Pupation occurs June 8-14, the moths emerge June 28 to July 6.

Comparing these larvae with the allied genera *Hydroecia* and *Papaipena,* they come closer to the former in their peculiar ringed coloration, which finds duplication in the similar larval pattern of *H. immanis* and *micacea.*

There is little doubt that this colony of *ryensis* has flourished many years at its present station. Both they and their

food plants possess certain features that may make for longevity and a vigorous line of descent. While the moths emerge in a short interval, there is a noteworthy appearance of males first; further these males are exceedingly active. Even in day time it is hard to raise the lid of a breeding box without some escaping, while at night they very soon spoil their wings. The tendency of such borers to form isolated colonies involves the likelihood of inbreeding to some degree. As working against this, the earlier appearance of the males indicates there may be some dispersal of them to seek mates afar. Their activity and strength of flight would permit of it.

With the food plant there is surely a pronounced effort to avoid self-fertilization at the time it blooms, its unisexual spikelets striving to co-operate with those of another flower. Here we see the staminate portion blooming sooner than the pistillate, on the same stemmed rachis, and there is so much difference that chance of self-fertilization is rather remote. Their great clustered root stocks show in part a perennial record of the culms born, and many of the plants in the type locality have surely been established for half a century. Thus we seem to have a plant and an insect admirably associated, and a knowledge of the food habit will, we predict, bring the species to light from many other quarters.

Use of Ants in Punishments (Hymen.).

In British Guiana the natives make what are termed "ant mats," which are employed in certain ordeals, and as punishments for youngsters, especially of the female sex. Certain varieties of "biting" ant are stuck into the smaller interstices of the mat, where they are held in place by the stretching upon the handles of the mat, which is then pressed as a whole upon the forehead, breast, or stomach. (*Jour. Roy. Anthrop Inst.*, July-Dec., 1912.)

To Collect Lepidopterous Pupae.

In the spring thousands of young trees are sold by nurseries and are dug for shipment and many lepidopterous pupae are unearthed. This should prove a fruitful source of supply for the collector and give opportunity to rear many rare and beautiful specimens. Workmen in nurseries would doubtless be very glad to save pupae for those interested, especially if some slight compensation were offered.—Henry Skinner.

ENTOMOLOGICAL NEWS.

[The Conductors of ENTOMOLOGICAL NEWS solicit and will thankfully receive items of news likely to interest its readers from any source. The author's name will be given in each case, for the information of cataloguers and bibliographers.]

TO CONTRIBUTORS.—All contributions will be considered and passed upon at our earliest convenience, and, as far as may be, will be published according to date of reception. ENTOMOLOGICAL NEWS has reached a circulation, both in numbers and circumference, as to make it necessary to put "copy" into the hands of the printer, for each number, four weeks before date of issue. This should be remembered in sending special or important matter for a certain issue. Twenty-five "extras," without change in form and without covers, will be given free, when they are wanted; if more than twenty-five copies are desired, this should be stated on the MS. The receipt of all papers will be acknowledged. Proof will be sent to authors for correction only when specially requested.—Ed.

PHILADELPHIA, PA., MAY, 1913.

Mr. S. A. Rohwer, Corresponding Secretary of the Entomological Society of Washington, has recently written us that "on April 3rd, Dr. David Sharp, Lawnside, Brockenhurst, Hants, England, and Dr. J. H. Fabre, Serignan, Vaucluse, France, were chosen as the first two honorary members of the Entomological Society of Washington. The Entomological Society of Washington has ten honorary members to be chosen only from among foreign entomologists."

We are glad to learn that the Entomological Society of Washington has provided for foreign honorary members and the choice which has been made for the first two places in the list is highly to be commended. Very diverse opinions have been expressed on the honor attaching to such membership in societies in general but, when all has been said, it is a pleasant thing for one who has labored long and well in our chosen science to read his own name in a brief list of those deemed worthy of special mention by his collaborators. Entomology is no national property, but is international in its scope and in its endeavor. It will prosper as international co-operation increases, and one of the ways by which this co-operation is furthered is just that way which the Washington Society is instituting.

Notes and News.

ENTOMOLOGICAL GLEANINGS FROM ALL QUARTERS OF THE GLOBE.

Macrobrachius in America (Dipt.)

This genus was erected by Dr. H. Dziedzicki, in 1889, for the Mycetophilid, *M. kowarzii* n. sp. from eastern Europe. In Bulletin No. 200, Maine Agricultural Experiment Station, p. 60, I described, under the name *Phronia producta,* a fly taken at Brookline, Mass., which should have been placed in *Macrobrachius.* By some mischance I overlooked the genus, although three years previously I had correctly placed it in the dichotomic table in Genera Insectorum, Fasc. 93, page 57, last line. In the key of the last mentioned paper there are two entries of the genus, the first of which (page 56, seventh line from the bottom) should be stricken out, as an examination shows that the ocelli are placed as in *Phronia.*—O. A. JOHANNSEN, Cornell University, Ithaca, New York.

Pacific Slope Association of Economic Entomologists.

The following program was announced for the fourth annual meeting of this Association, at the University of California, Berkeley, Cal., on Thursday, Friday and Saturday, April 10-12, 1913, in affiliation with the Pacific Association of Scientific Societies:

Thursday afternoon, April 10. "Notes on Entomological Literature and Events of 1912," Professor R. W. Doane, Leland Stanford University. "Internal Anatomy and Development of *Epidiaspis piricola,*" Mr. LeRoy Childs, Leland Stanford University. "A new method of automatic dehydration," Mr. George A. Coleman, University of California. "A preliminary list of the Coleoptera that have been introduced into California," Dr. Edwin C. Van Dyke, University of California. "The Sensory Reactions of housefly larvae with special reference to light, heat and moisture," Mr. R. J. Jungerman, University of California.

Thursday evening, April 10. Meeting of the Pacific Coast Entomological Society under the Presidency of Dr. Edwin C. Van Dyke.

Friday, April 11. "Sesian borers of strawberries, blackberries and currants in the Santa Clara Valley," Mr. Verne G. Stevens, Leland Stanford University. "Raisin Insects," Mr. L. J. Nickels, University of California. "A Resumé of Aphid Economics," Professor J. C. Bridwell, University of California. "Our Quarantine Service," Professor A. J. Cook, State Commissioner of Horticulture. "The relation of sensory reactions to the assembling habits of *Hippodamia convergens,*" Miss Martha S. Beaser, University of California. "Im-

portation of Beneficial Insects," Professor A. J. Cook. "Insecticide Co-efficients," Professor C. W. Woodworth, University of California. "Flour paste as a control for Red Spiders and as a spreader for contact insecticides," Mr. W. B. Parker, U. S. Dept. of Agriculture. "Fumigation Injury to Oranges," Professor C. W. Woodworth. "The Progress made in the use of Miscible Oils in California," Mr. R. R. Rogers, R. R. Rogers Chemical Co.

Friday evening, April 11. Dinner and Round Table.

Saturday morning, April 12. "Cockroaches as carriers of infection," Mr. Y. Nelson, University of California. "Notes on Diptera reared from cow manure," Mr. W. L. Smith, Leland Stanford University. "Some observations on *Stomoxys calcitrans*," Mr. H. F. Gray, University of California. "Some special problems of External Parasitization," Professor Vernon L. Kellogg, Leland Stanford University. "The present status of knowledge respecting the *Stomoxys* fly and its relation to Poliomyelitis," Professor W. B. Herms, University of California. "A study of the prevalence of malaria in California by counties covering a period of four years," Professor W. B. Herms. "An experimental study of insecticides as applied to fly larvae," Miss Laura Cairns, University of California.

Saturday afternoon, April 12. Business meeting.

Saturday evening, April 12. Pacific Association of Scientific Societies.

W. B. Herms, *Secretary-Treasurer.*

Society for the Advancement of Forest Entomology in America.

An organization, to be known as the "Society for the Advancement of Forest Entomology in America," was effected at a meeting held at Washington, D. C., on March 1, 1913, with A. D. Hopkins, T. E. Snyder, S. A. Rohwer, F. C. Craighead, C. T. Greene, and W. S. Fisher, of Washington, D. C., H. E. Burke and J. M. Miller, of Placerville, California, Josef Brunner, of Missoula, Montana, and W. D. Edmonston, of Ashland, Oregon, as charter members.

The object of this Society is to promote a more general interest in the subject of forest entomology and the protection of forest resources from avoidable waste due to the depredations of insects.

Membership is open to persons who manifest an interest in the subject of insects in their relation to the forest resources and the forest products of North America, provided that they are recommended by a member or a responsible person, and the initiation fee of fifty cents and the annual dues of fifty cents are paid to the Secretary-Treasurer.

The following officers were elected: President, A. D. Hopkins; Vice President, H. E. Burke; Recording Secretary, T. E. Snyder; Corresponding Secretary-Treasurer, F. C. Craighead.

Annual meetings will be held at which the economic side of forest

entomology will be discussed, including the reading of papers on the conservation of forest resources. It is intended to publish Proceedings when the Society becomes established on a sufficiently extensive basis. In the meantime, papers and discussions of general interest will be presented for publication to forestry, entomological and timber journals.

Persons interested in this movement should correspond with Mr. F. C. Craighead, Corresponding Secretary-Treasurer, Room 410, Evening Star Building, Washington, D. C.

Notes on Lycaena amyntula, monica and tejua (Lep.).

I was interested in what Mr. Bethune-Baker said in the last issue of this journal, in relation to *amyntula* being single-brooded, with possibly a partial second brood. There seems to be a lack of data in regard to the species and I thought it would prove of interest to publish the data on the specimens in the collection of the Academy of Natural Sciences of Philadelphia, where the specimens had more than State labels on the pins. Los Angeles, California, April 18; Cochise County, Arizona, May (Huachuca Mountains?); Olympia, Washington, May; Golden, Colorado, May 24th; Stockton, Utah, May 31st; Fort Klamath, Oregon, June 10, 17, 21; Priest River, Idaho, June 21st; City Creek Canyon, Salt Lake City, Utah, July 5th; Silver Lake, Utah, July 15, 18th. These are all bright, fresh specimens and those mentioned from City Creek Canyon and Silver Lake were taken by myself. It would appear from these records that there may be a second brood in July. It should also be remembered, however, that the late records are in places where it is relatively cold and at considerable elevations in the mountains, Silver Lake being at 10,000 feet altitude. I have seen ice in the lakes and streams there in July. Now that it is the custom to put date of capture on specimens it will be easier to work out these interesting problems.

I look upon an examination of the genitalia as a valuable aid in the identification and separation of species. After such examination and differentiation is made, the student should be able to give satisfactory secondary characters to separate the forms or species. It is too much, to ask those interested, to make mounts of the genitalia of all their specimens to identify them. Mr. Bethune-Baker would confer a favor by giving absolute characters to separate *amyntula* and *comyntas* other than genitalic.

He evidently received some of his references second-hand. *Lycaena tejua* Reakirt is a synonym of *Hesperia strabo* Fabricius, and *Lycaena monica* Reakirt is a synonym of *Hesperia cnejus* Fabricius.

The types are in the Strecker collection, now in the Field Museum, Chicago, Illinois. "Reakirt received at various times considerable ma-

terial from Lorquin, Jr., a dealer in San Francisco, who sent him indiscriminately examples from the Philippines, California and Europe not accurately ticketed as to locality, hence such mistakes as the above, as the real home of *tejua,* which is only a synonym of *strabo* was somewhere in the Philippines or the Dutch East Indies." The remarks preceding apply equally to *monica* and *cnejus.* See Strecker, Lep. Rhop. Het. suppl. No. 3, p. 20.—HENRY SKINNER.

International Exposition of Ornithology, Entomology and Botany.

[An "Exposition Internationale documentaire d'Ornithologie, d'Entomologie et de Botanique dans leur rapports avec l'Ornithologie" has been organized by three of the Ornithological Societies of Belgium. We have received the following statement in regard to it.]

We have the honour to send you a program of our approaching exhibition which will take place from May 3rd, to June 1st, 1913, on the premises of the "Palais des Beaux-Arts" in the town of Liege. This exhibition is of quite a new kind, and believe we can certify that it will prove a great success, considering the adhesions which have already been promised us up to the present.

We should be very glad if you would take part in it by sending collections. As you will observe our field is pretty large and collections of birds, insects, plants, different books, etc., will find a place in it. Knowing all the value that amateurs attach, and rightly, to their collections which are sometimes very fragile, we can assure you they will be the object of the greatest care on our part. Besides a vigorous watch, being kept day and night in the exhibition, we have considered it wise to assure against the risk of fire.

We draw the attention of possible exhibitors to the fact that what they send will be admitted in transit and that every facility for sale will be eventually reserved to them. Finally, it is incontestable that professionals and dealers have every advantage in putting themselves before the public by means of an advertisement in our catalogue which will be published on the occasion of this exhibition. This is a novelty in Europe and will contribute to the union of amateurs and professionals.

We beg to remain, sir, for the Committee, the General Commissary,

L. CUISINIER, a Ans, rue de Bruxelles 155 (Belgique.)

[The Exposition is stated to have the encouragement of the King and the patronage of the Queen of the Belgians; the Honorary Committee comprises the Minister of Agriculture and Public Works, the Minister of Sciences and Arts, the Governor of the Province and the Mayor of the City of Liege and the Mayor of Verviers, and among other members we note the names of the entomologists MM. Baron Crombrughe de Picquendaele and G. Severin.]

On the Humming of Chironomidae (Dipt.).

Mr. E. E. Green, of Peradeniya, Ceylon, in the *Entomologists' Monthly Magazine* for February, 1913, gives an account of his experience with *Chironomus ceylanicus* Kieffer, of which the following is an abstract:

"Colombo, Ceylon, is plagued at certain seasons by dense swarms of so-called 'lake-flies,' which issue at night-fall from the margins of the shallow lake that spreads its many arms through the residential quarters of the town. . . . Bungalows situated on the leeward side of the water are rendered almost uninhabitable during the fly season, when the insects swarm into the lighted rooms, blackening the walls . . . and making themselves generally objectionable. In the morning they may be swept up literally by the bushel.

I happened to be bicycling one evening along a road that impinged—at one point—upon an arm of the lake. On approaching this spot I became aware of a gradually increasing and insistent noise . . . when I suddenly was involved in a dense fog of flying insects. I was instantly smothered in the flies which filled my eyes, ears and nose, almost blinding and suffocating me. . . . The noise which, at the time, I supposed to be produced by the vibration of the myriad wings, was most extraordinary. I now understand that it is more probably attributable to actual stridulation."

Entomological Literature.

COMPILED BY E. T. CRESSON, JR., AND J. A. G. REHN.

Under the above head it is intended to note papers received at the Academy of Natural Sciences, of Philadelphia, pertaining to the Entomology of the Americas (North and South), including Arachnida and Myriopoda. Articles irrelevant to American entomology will not be noted; but contributions to anatomy, physiology and embryology of insects, however, whether relating to American or exotic species, will be recorded. The numbers in **Heavy-Faced Type** refer to the journals, as numbered in the following list, in which the papers are published, and are all dated the current year unless otherwise noted, always excepting those appearing in the January and February issues, which are generally dated the year previous.

The records of systematic papers are all grouped at the end of each Order of which they treat, and are separated from the rest by a dash.

For records of Economic Literature, see the Experiment Station Record, Office of Experiment Stations, Washington.

2—Transactions, American Entomological Society, Philadelphia. **4**—The Canadian Entomologist. **5**—Psyche. **7**—U. S. Department of Agriculture, Bureau of Entomology. **8**—The Entomologist's Monthly Magazine, London. **9**—The Entomologist, London. **11**—Annals and Magazine of Natural History, London. **21**—The Entomologist's Record, London. **22**—Zoologischer Anzeiger, Leipzig. **38**—Wiener Entomologische Zeitung. **49**—Annales historico-naturales Musei Nationalis Hungarici, Budapest. **50**—Proceedings of

the U. S. National Museum. **59**—Sitzungsberichte, Gesellschaft der naturforschenden Freunde, Berlin. **75**—Annual Report, Entomological Society of Ontario, Toronto. **79**—La Nature, Paris. **87**—Bulletin, Societe Entomologique de France, Paris. **92**—Zeitschrift fur wissenschaftliche Insektenbiologie. **99**—Cornell University Agricultural Experiment Station, Ithaca. **104**—Mittheilungen, Naturhistorisches Museum in Hamburg. **148**—New York Agricultural Experiment Station, Geneva. **153**—Bulletin, American Museum of Natural History, New York. **160**—Internationale Revue der Gesamten Hydrobiologie und Hydrographie, Leipzig. **166**—Internationale Entomologische Zeitschrift, Guben. **169**—"Redia," R. Stazione di entomologia Agraria in Firenze. **175**—Aus der Natur, Berlin. **176**—Archiv fur entwicklungsmechanik der Organismen, Leipzig. **179**—Journal of Economic Entomology. **182**—Revue Russe d'Entomologie, St. Petersburg. **191**—Natur, Munchen. **194**—Genera Insectorum. Diriges par P. Wytsman, Bruxelles. **198**—Biological Bulletin, Marine Biological Laboratory, Woods Hole, Mass. **216**—Entomologische Zeitschrift, Frankfurt a. M. **281**—Annals of Tropical Medicine and Parasitology, University of Liverpool, Series T. M. **320**—Der Tropenpflanzer, Berlin. **322**—Journal of Morphology, Philadelphia. **337**—Meddelelser om Gronland. Denmark Ekspeditionen til Gronlands Nordostkyst 1906-08, Copenhagen. **351**—Zeitschrift fur Allgemeine Physiologie. Herausgegeben von Max Verworn, Jena. **368**—The Monthly Bulletin of the State Commission of Horticulture, Sacramento, Cal. **369**—Entomologische Mitteilungen, Berlin-Dahlem. **390**—Zoologischer Beobachter, Frankfurt a. Main. **411**—Bulletin of the Brooklyn Entomological Society. **420**—Insecutor Inscitiae Menstruus: A monthly journal of entomology, Washington, D. C. **421**—Report of the State Entomologist on the Noxious and Beneficial Insects of Illinois, Urbana. **422**—Coleopterologische Rundschau, Wien. **423**—Journal of the College of Agriculture, Sapporo, Japan.

GENERAL SUBJECT. **Babak, E.**—Ueber die atmung der insekten, **175,** 1913, 293-98. **Berlese, A.**—Piccolo apparecchio per raccogliere automatecamente i Calcididi parassiti da collezione, **169,** viii, 471-72. Gli insetti Vol. II, fasc. 4-6. Gli affini degli insetti. L'antichita degli insetti, pp. 97-176. **Criddle, N.**—Insect migration at Aweme, Manitoba, **75,** 1911, 74-76. **Curtis, W. P.**—The coloration problem, **21,** 1913, 57-61 (cont.). **Dewitz, J.**—Physiologische untersuchungen bezuglich der verwandlung von insekten-larven, **22,** xli, 385-98. **Essig, E. O.**—Injurious and beneficial insects of California, **368,** ii, 1-351. **Gardner, C. C. B.**—Experiments on the capability of ants to withstand drought and to recover from its effects when nearly dead, **21,** 1913, 81-83. **Gibson, A.**—The entomological record 1911, **75,** 1911, 89-112. **Gibson, A. et al.**—Reports on insects of the

year 1911, **75,** 1911, 9-38, 72-74. **Grandori, R.**—Studi sullo sviluppo larvale dei copepodi pelagici, **169,** viii, 360-457. **Hartman, F. A.**—Variations in the size of chromosomes. Giant germ cells in the grasshopper, **198,** xxiv, 226-244. **Herrick, G. W.**—Some external insect parasites of domestic fowls, **179,** vi, 81-85. **Hewitt, C. G.**—Insect scourges of mankind (abstract), **75,** 1911, 46-50. **Holloway, T. E.**—Field observations on sugar-cane insects in the U. S. in 1912, **7,** Circ. 171. **Kirby, W. F.**—Obituary notice, **166,** vi, 325-26. **Kusnezov, N. J.**—Sur la tendance vers les denominations superflues en entomologie ("die Namengeberei" des auteurs allemands), (Russian), **182,** xii, 256-76. **Lengerken, H. v.**—Etwas ueber den erhaltungszustand von insekteninklusen im Bernstein, **22,** xli, 284-86. **Olsen, C. E.**—The enemies of a plant louse, **411,** viii, 41-42. **Oshanin, W.**—Zur nomenklaturfrage in der zoologischen systematik, **216,** xxvi, 197-200. **Semichon, L.**—Sur la differenciation chromatique de certains granules de reserve chez des insectes, **87,** 1913, 69. **Sokolar, F.**—Entomologische fundorte, **422,** ii, 46-51. **Walker, E. M.**—Some injurious forest insects at De Grassi Point, Lake Simcoe, **75,** 1911, 55-63. **Woglum, R. S.**—Report of a trip to India and the Orient in search of the natural enemies of the citrus white fly, **7,** Bul. 120. **Zacher, F.**—Notizen ueber schadling tropischer kulturen, **320,** 1913, 131-44.

ARACHNIDA, ETC. Cooley, R. A.—Notes on little known habits of....Dermacentor venustus, **179,** vi, 93-95. **Kautzsch, G.**—Studien ueber entwicklungsanomalien bei Ascaris, II, **176,** xxxv, 642-691. **Quayle, H. J.**—Some natural enemies of spiders and mites, **179,** vi, 85-88.

Kraepelin, K.—Neue beitrage zur systematik der gliederspinnen, II, **104,** xxix, 45-88. **Tragardh, I.**—Acari (of the Danish expedition to Greenland, 1906-1908), **337,** iii, 417-26.

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Navas, R. P. L.—Nemopteridae (Neuroptera), **194,** fas. 136, 23 pp. **Navas, R. P. L.**—Zur lebensweise der ameisenlowen, **369,** ii, 81-87. **Paine & Mann.**—Mallophaga from Brazilian birds, **5,** 1913, 15-23.

ORTHOPTERA. Caudell, A. N.—Locustidae, subfam. Meconeminae, Phyllophorinae, Tympanophorinae, Phasgoneurinae, Phasmodinae, Bradyporinae, Ephippigerinae, **194,** fas. 138, 140. **Hartman, F. A.**—(See under General Subjects.)

Bruner, L.—Results of the Yale Peruvian expedition of 1911.—Acridiidae, **50,** xliv, 177-87. **Caudell, A. N.**—Results of the Yale

Peruvian expedition of 1911.—O. (exclusive of Acridiidae), **50,** xliv, 347-57. **Chopard, L.**—Description d'un genre nouveau et d'une espece nouvelle de Mantidae de la Republique Argentine, **87,** 1913, 55-60. **Karny, H.**—Locustidae, subfam. Listroscelinae, Conocephalinae, Copiphorinae, Agraeciinae, **194,** fas. 131, 135, 139, 141.

HEMIPTERA. Blacklock, B.—On the resistance of "Cimex lectularius" to various reagents, powders, liquids and gases, **281,** vi, 415-434. **Hartzell, F. Z.**—The grape leaf-hopper, 148, Bul. 359. **Hewitt, C. G.**—The spring grain aphis or "green bug" (Toxoptera graminum), **4,** 1913, 77-80. **Teodoro, G.**—Sulla struttura delle valve anali del "Lecanium Oleae," **169,** viii, 458-61. **Wheeler, W. M.**—A giant coccid from Guatemala, **5,** 1913, 31-33.

Distant, W. L.—Homoptera. Cicadidae, subfam. Cicadinae, **194,** fas. 142, 63 pp. **Kirkaldy, (late) G. W.**—Generic tables for the cimicid subfamilies Phyllocephalinae, Phloeinae and Dinidorinae, **4,** 1913, 81-84. **Lallemand, V.**—Homoptera. Cercopidae, **194,** fas. 143, 167 pp.

LEPIDOPTERA. Burgess, A. F.—The dispersion of the gipsy moth, **7,** Bul. 119. **Cockerell, O. J.**—Illustrations of American L., **9,** 1913, 73. **Dawson, H.**—Some notes on Hepialus hyperboreus, **75,** 1911, 81-82. **Frohawk, F. W.**—Hibernation of Pyrameis atlanta, **9,** 1913, 40-42. **Gill, J. B.**—The fruit tree leaf-roller (Archips argyrospila), **7,** Bul. 116, pt. 5. **Harwood, W. H.**—Duration in the larva state of Trochilium apiformis, **9,** 1913, 58. **Johnson & Hammar.**—The grape-berry moth (Polychrosis vitaena), **7,** Bul. 116, pt. 2. **Kleine, R.**—Die kummelmotte Schistode-pressaria nervosa, **92,** 1913, 37-41 (cont.). Das ei von "Propylaea 14-punctata," **166,** vi, 330-31. **Kosminsky, P.**—Zur frage ueber die unbestandigkeit der morphologischen merkmale bei Abraxas grossulariata (Russian), **182,** xii, 313-28. **Rau & Rau.**—The fertility of Cecropia eggs in relation to the mating period, **198,** xxiv, 245-50. **Rizzi, M.**—Sullo sviluppo dell'uovo di "Bombyx mori," **169,** viii, 323-59. **Rothke, M.**—Ein weiteres beispiel des schlupfens von schmetterlingen bei niederer temperatur, **92,** 1913, 1-3. **Rowland-Brown, H.**—Further notes on Hesperid classification, **9,** 1913, 25-28, 109-10. **Schmidt, A.**—Die entwicklungsgeschichte von "Oxytrypia arbiculosa" (Hungarian), **49,** x, 617-37. **Schuster, W.**—Beitrage zur oekologie und biologie dieser "Lichtmotte" (Eurrhypara urticata) wie der Hydrocampinae uberhaupt, **92,** 1913, 42-44. **Sheldon, W. G.**—A contribution to the life-history of Brenthis frigga, **9,** 1913, 80-81. **Tanaka, Y.**—Studies on the structure of the silk glands and the silk formation in Bombyx mori, **423,** iv, pt. 2, 1-28, 1911. **Watson, J. H.**—Hewitson's drawings of L., **9,** 1913, 63. **Wood, J. H.**—The wingless geometer, **8,** 1913, 59-61.

Boullet, E.—Description d'une forme femelle de Baronia brevicornis, **87,** 1913, 99-101. **Comstock, W. P.**—A new No. American butterfly in the family Lycaenidae, **411,** viii, 33-36. **Dyar, H. G.**—Descriptions of n. spp. of Saturnian moths in the coll. of the U. S. Nat. Museum. Descriptions of new L., chiefly from Mexico, **50,** xliv, 121-134, 279-324. The species of Sphida. The larvae of Xanthopastis timais. A note on the Macrothecinae. **420,** 1913, 18, 19, 22-23. **Jordan, K.**—Diagnoses of some American Acraeinae, **9,** 1913, 32-33. **Jorgensen, P.**—Zur kenntnis der Syntomiden Argentiniens, **92,** 1913, 3-7 (cont.). **Meyrick, E.**—Heterocera, fam. Adelidae; fam. Micropterygidae, **194,** fasc. 132, 9 pp.; fasc. 133, 12 pp. **Schaus, W.**—New spp. of Erycinidae from Costa Rica, **11,** xi, 298-303. **Swett, L. W.**—Geometrid notes—new varieties, **4,** 1913, 75-76. **Walsingham, L.**—Biologia Centrali-Americana, IV: Heterocera, 169-224.

DIPTERA. Adie, H. A.—Note on the sex of mosquito larvae, **281,** vi, 463-66. **Berlese, A.**—La distruzione della Mosca domestica, **169,** viii, 462-70. **Bishopp, F. C.**—The stable fly, an important live stock pest, **179,** vi, 112-126. **Brues, C. T.**—The relation of the Stomoxys calcitrans to the transmission of infantile paralysis, **179,** vi, 101-110. **Elser, H.**—Aus dem leben der schlammfliege, **390,** 1913, 33-39. **Forbes, S. A.**—(See below.) **Frost, C. A.**—Peculiar habits of small D., "Desmometopa latipes," **5,** 1913, 37. **Hunter, S. J.**—Pellagra and the sand-fly, II, **179,** vi, 96-100. **Illingsworth, J. F.**—A study of the biology of the apple maggot (Rhagoletis pomonella), together with an investigation of methods of control. Cherry fruit flies and how to control them, **99,** Bul. 324 and 325. **Knab, F.**—Some earlier observations on the habits of Aphiochaeta juli, **420,** 1913, 24. **Richardson, C. H.**—(See under Hymenoptera.) **Strickland, E. H.**—Further observations on the parasites of Simulium larvae, **322,** xxiv, 43-106. **Tothill, J. D.**—Tachinidae and some Canadian hosts, **4,** 1913, 69-75. **Vimmer, A.**—Erganzungen zu dem aufsatz "Zur kenntnis Phytomyza xylostei," **92,** 1913, 19-21. **Weiss, H. B.**—Positive thigmotropism of Culex pipiens in hibernation, **5,** 1913, 36-7. **Weiss, H. B.**—(See under Coleoptera.)

Alexander, C. P.—New neotropical Antochini (Tipulidae), **5,** 1913, 40-54. A revision of the So. American dipterous insects of the family Ptychopteridae, **50,** xliv, 331-35. **Becker, T.**—Berichtigungen zur monographie der Chloropiden, **49,** xi, 645-46. **Forbes, S. A.**—On black-flies and buffalo-gnats (Simulium) as possible carriers of pellagra in Illinois, **421,** xxvii, 21-55. **Johnson, C. W.**—Species of the genus Gaurax of the eastern U. S., **5,** 1913, 34-35. Insects of Florida, **153,** xxxii, 37-90. **Knab, F.**—Some neotropical Syrphidae. Names and synonymy in Anopheles. **420,** 1913, 13-17. **Malloch, J. R.**—A new genus and 3 n. spp. of Phoridae from N. America, with notes on ....Crepidopachys and Pronomiophora, **5,** 1913, 23-26. Descriptions

of n. spp. of American flies of the family Borboridae. Two n. spp. of D. in the U. S. National Museum collection, **50,** xliv, 361-372, 461-463. **Villeneuve, J.**—Notes synonymiques, **38,** xxxii, 128.

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Bowditch, F. C.—Notes on Chlamydae with descriptions of a few new forms, **2,** xxxix, 1-21. **Clavareau, H.**—Coleopterorum catalogus, Pars 51. Chrysomelidae: 1. Sagrinae; 2. Donaciinae; 3. Orsodacninae; 4. Criocerinae, 103 pp. **Dupuis, P.**—Carabidae, subfam. Notiophilinae, **194,** fasc. 134, 5 pp. **Fall, H. C.**—A brief review of our species of Magdalis, with notes and descriptions of other No. Am. Rhynchophora, **2,** xxxix, 23-72. **Kerremans, C.**—Monographie des Buprestides. VI, Livr. 4, 5, 6. **Pic, M.**—Deux nouveaux Anthicides de la Republique Argentine. Trois nouveaux Pelecotomoides, **87,** 1913, 46-48, 93-94. **Wickham, H. F.**—New No. American Elateridae and Scarabaeidae, **5,** 1913, 27-31.

HYMENOPTERA. Bischoff, H.—Ein interessanter hymenopterenzwitter, **92,** 1913, 53-54. **Brun, R.**—Zur biologie von Formica rufa und Camponotus herculeanus, **92,** 1913, 15-19. **Forel, A.**—Die weibchen der "Treiberameisen" Anomma nigricans....nebst einigen anderen ameisen aus Uganda, **104,** xxix, 173-181. **Foster, S. W.**—The cherry fruit sawfly (Hoplocampa cookei), **7,** Bul. 116, pt. 3. **Rohwer, S. A.**—Chalcidids injurious to forest tree seeds, **7,** Tech. Ser. 20, pt. VI. **Wheeler, W. M.**—Notes on the habits of some Central American stingless bees, **5,** xx, 1-9. **Winn, A. F.**—A hymenopterous parasite of Hepialus thule, **75,** 1911, 70-71.

Cockerell, T. D. A.—Melionine bees from Central America, **5,** 1913, 10-14. **Emery, C.**—Formicidae, subfam. Dolichoderinae, **194,** fasc. 137, 50 pp. **Kurdjumov, N. V.**—Synonymic note on some Trichogrammatidae, **182,** xii, 281. **Mocsary, A.**—Species Chrysididarum novae, **49,** x, 385-414, 549-592. **Richardson, C. H.**—An undescribed hymenopterous parasite of the housefly, **5,** 1913, 38-39. **Rohwer, S. A.**—Results of the Yale Peruvian expedition of 1911—Vespoidea and sphecoidea, **50,** xliv, 439-54. **Viereck, H. L.**—Results of the Yale Peruvian expedition of 1911.—Ichneumonoidea, **50,** xliv, 469-70.

Doings of Societies.

FELDMAN COLLECTING SOCIAL.

Meeting of January 15, 1913, at 1523 South Thirteenth Street, Philadelphia. Eleven members were present. President Haimbach in the chair.

The President read his annual address, which was ordered to be incorporated in the minutes.

The following officers were elected to serve for the year 1913: President, Frank Haimbach; Vice-president, H. A. Wenzel; Treasurer, H. W. Wenzel; Secretary, George M. Greene; Assistant Secretary, Chas. T. Greene.

Mr. Wenzel remarked on the genus *Eleodes* and particularly on a minute species collected by H. A. Wenzel in Southern Texas. This species is not in the American Entomological Society's collection or the Horn collection. He had sent this with three other species to Dr. Blaisdell (who has worked on this group for ten years, having had the material from the collections all over the United States) for confirmation, as he had worked it out in Dr. B.'s monograph as *debilis* LeC. The reply received was that the former was undoubtedly *debilis* and the other three, had they been found in Arizona or further north, he would pronounce to be all new species, but having come from Texas they might be Mexican, and he would have to look them up further in the Biologia Centrali Americana Coleoptera.

Two species of moths were exhibited by Geo. M. Greene; *Chloridea virescens* Fabr., collected on a window in City Hall by himself July 2, 1912; among other things this species in-

fests the tobacco plant. *Mesoleuca vasaliata* Gn., from Roxborough, Pa., April 16, 1910, collected by C. T. Greene.

Adjourned to the annex.

Meeting of February 19, 1913, at 1523 South Thirteenth Street, Philadelphia. Nine members were present; Mr. John Pemberton, Jr., of this city, visitor. President Haimbach in the chair.

Mr. Wenzel stated that he had gone over *Cychrus* and had added many species to his collection of this group, which now numbers about four hundred specimens. These were exhibited. He said that it was peculiar that all the iridescent forms came from this side of the Rockies. His collection of *Dicaelus* was also shown, with only one known species missing.

Mr. Harbeck started a discussion on the Bot Flies, and extracts were read from Howard's "Insect Book." The chapter on Midges was also read by Mr. Wenzel, Jr.

Mr. Wenzel, Jr., said he had noticed small white larvae in the seed-pods of the wild hollyhock, *Hibiscus moscheutos,* at Essington, Pa., but none of the members knew the species.

Adjourned to the annex.

GEORGE M. GREENE, *Secretary.*

OBITUARY.

L. E. Ricksecker.

LUCIUS EDGAR RICKSECKER, well known to all American students of Coleoptera, died at his home in San Diego, California, January 30, 1913, (as was briefly announced in the NEWS for March, page 144), of an attack of angina pectoris, following a stroke of paralysis, nine months before, from which he had recovered but slightly.

He was born in Nazareth, Pennsylvania, January 14, 1841. From October, 1862, to July, 1863, he was a corporal in the 153d Pennsylvania volunteers. In 1868 he went to Salt Lake City, where for several years he was in charge of the Division Engineer's office of the Union Pacific Railroad, and later serv-

ed in a similar capacity on the Northern Pacific Railroad at Spokane. Since 1873 he has resided almost continuously in California, and was for many years county surveyor, or City Engineer, at Santa Rosa. Following the great earthquake and fire of 1906, in which he lost heavily, he went to Oakland for a year, whence in October, 1907, he moved to San Diego.

Mr. Ricksecker was an enthusiastic naturalist and a collector of objects of natural history from boyhood. At first birds' eggs, fossils and shells received his attention, but later, largely through the influence of Prof. O. B. Johnson, of the University of Washington (State), he became interested in insects, especially Coleoptera, of which he accumulated a valuable collection. These, with all other collections and his library as well, were totally destroyed in the catastrophe which, on the 18th of April, 1906, fell almost as heavily on Santa Rosa as upon San Francisco. He did not again attempt a private cabinet, but for several years he collected for sale Lepidoptera and Coleoptera about San Diego, among these a number of species new to science.

Mr. Ricksecker is best known to entomologists as a Collector of West Coast Coleoptera, and there is hardly a cabinet of any size in this country but that has been enriched by his efforts. While he has published very little, he has contributed from his experience much valuable information in letters to correspondents, notably, on the occurrence and habits of *Pleocoma*, and such fine species as *Pleocoma ricksecker*i and *Cychrus ricksecker*i have been named in his honor.

A correspondent for many years previously, I have, for the past dozen years, been personally acquainted with Mr. Ricksecker. I found him a good naturalist, well and widely informed; a courteous gentleman; a firm friend, generous and just in all his dealings—in short, a man that it was worth while to know.

Mr. Ricksecker was married in 1881 to Miss Henriette E. McFarland, of San Francisco, his second wife, who survives him.

H. C. Fall.

Correction.

Page 186 (April News), lines 5 and 6. The paper on Schlechtendalia credited to Rigakuhakushi, C. S., should be credited to Sasaki, C.

EXCHANGES.

Not Exceeding Three Lines Free to Subscribers.

☞ These notices are continued as long as our limited space will allow; the new ones are added at the end of the column, and only when necessary those at the top (being longest in) are discontinued

For Exchange—Lepidoptera from Pennsylvania, Florida, Arizona and California for desirable North American species.—Henry Engel, 753 Ensign Ave., Pittsburg, Pa., U. S. A.

Exchange—I desire to exchange Lepidoptera in papers with collectors in the Southern States, Central America, India and Japan.—Paul C. Squires, Clinton, N. Y.

Wanted—Entomologica Americana, Vol. III, No. 12. Will pay cash or give Lepidoptera in exchange. Have western species in papers and local species mounted to offer for other mounted Lepidoptera.—Alex. Kwiat, 2055 Pensacola Ave., Chicago.

I have hundreds of North American Lepidoptera of all families to exchange. Exchange lists asked for. Mine on application.—Joseph H. Reading, 1456 N. Rockwell St., Chicago, Ill.

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Wanted—Living cocoons of *Tiphia inornata* and *Myzine sexcincta*. Will pay $10.00 per hundred Please correspond for details of shipping and quantity wanted, etc —Experiment Station, Hawaiian Sugar Planter's Association, Honolulu, Hawaii

Wanted—Tipulidae (Craneflies) from any part of the Globe, but especially of North America. Will buy for cash or give exchanges in Lepidoptera or Coleoptera —Dr. W. G. Dietz, Hazleton, Pa.

Wanted for cash, no exchange, general entomological literature to 1830; all literature directly or indirectly on North American Coleoptera to date. European and American dealers send lists.—R. P. Dow, 15 Broad St., New York, U. S. A.

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